

AD/A-005 300

PROTECTIVE CLOTHING

DEFENSE DOCUMENTATION CENTER

JANUARY 1975

DISTRIBUTED BY:

**NTIS**

National Technical Information Service  
U. S. DEPARTMENT OF COMMERCE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DDC-TAS-74-38	2. GOVT ACCESSION NO. AD-A005 300	3. RECIPIENT'S CATALOG NUMBER AD/A005 300
4. TITLE (and Subtitle)  PROTECTIVE CLOTHING (U)		5. TYPE OF REPORT & PERIOD COVERED Bibliography Jan 53- Jun 74
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Defense Documentation Center Cameron Station Alexandria, Virginia 22314		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE January 1975
		13. NUMBER OF PAGES 329
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)  UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  <div style="text-align: center;"> Reproduced by  <b>NATIONAL TECHNICAL INFORMATION SERVICE</b>  US Department of Commerce  Springfield, VA. 22151 </div> <div style="text-align: right;"> <b>DDC</b>  <b>RECEIVED</b>  FEB 28 1975  <b>RECEIVED</b>  D. </div>		
18. SUPPLEMENTARY NOTES  <b>PRICES SUBJECT TO CHANGE</b>		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) *Protective Clothing      Exposure Suits *Bibliographies      Underwater Clothing (See reverse) Fire Protective Clothing      Coveralls Flight Clothing      Rubber Gloves Gasproof Clothing      Abstracts		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This bibliography contains unclassified and unlimited citations on Protective Clothing. Discussed are protective clothing such as fire protective clothing, flight clothing, gasproof clothing, underwater clothing, pressure suits, and exposure suits. It also includes pertinent information on stress physiological, psychological and biological aspects of human performance in the use of protective clothing in actual test. <div style="text-align: right;">(See reverse)</div>		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

## ITEM 19, (Cont'd)

Flight Helmets  
Helmets  
Thermal Insulation  
Shoes

Human Factors Engineering  
Pressure Suits  
Protective Masks

## ITEM 20, (Cont'd)

Computer-generated indexes of Corporate Author-Monitoring  
Agency, Subject, Title and Personal Author are included.

OF DISBURSE

## FOREWORD

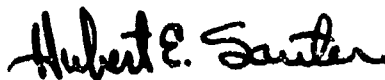
This unclassified and unlimited bibliography contains 236 selected citations of reports on *Protective Clothing*. These references provide information relating to specifications, design, fabrication techniques, synthetic fibers, textiles, plastics, heat tolerance, thermal stress, test analysis, and performance evaluation of materials used in protective clothing. Discussed are protective clothing such as fire protective clothing, flight clothing, gas-proof clothing, underwater clothing, pressure suits and exposure suits. It also includes pertinent information on stress physiological, psychological and biological aspects of human performance in the use of protective clothing in actual test.

These citations were taken from entries processed into the Defense Documentation Center's data bank during the period of January 1953 to September 1974.

Individual entries are arranged in AD number sequence under the heading AD Bibliographic References. Computer-generated indexes of Corporate Author-Monitoring Agency, Subject, Title, and Personal Author are provided.

**BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY**

**OFFICIAL**



**HUBERT E. SAUTER**  
Administrator  
Defense Documentation Center



## C O N T E N T S

	<u>Page</u>
FOREWORD.....	111
AD BIBLIOGRAPHIC REFERENCES.....	L
INDEXES	
CORPORATE AUTHOR-MONITORING AGENCY.....	O-1
SUBJECT.....	D-1
TITLE.....	T-1
PERSONAL AUTHOR.....	P-1

**Preceding page blank**

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-458 909

LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY  
DIV

HIGH-ALTITUDE PRESSURE SUITS AND HERMETICALLY SEALED  
CABINS FOR STRATOSPHERIC FLIGHTS. (U)

DESCRIPTIVE NOTE: TRANSLATIONS OF SOVIET-BLOC  
SCIENTIFIC AND TECHNICAL LITERATURE.

MAR 65 1EP SPASSKIY, V. A. ;

REPT. NO. ATD-T-65-13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM VESTNIK VOZDUSHNOGO  
FLOTA, NO. 5, PP. 48-49, 1938.

DESCRIPTORS: (•PRESSURE SUITS, USSR), PRESSURIZED  
CABINS, HERMETIC SEALS, HIGH ALTITUDE, STRATOSPHERE,  
BREATHING APPARATUS, OXYGEN EQUIPMENT, REVIEWS, DESIG(U)

HIGH-ALTITUDE PRESSURE SUITS AND HERMETICALLY  
SEALED CABINS FOR STRATOSPHERIC FLIGHTS.

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AR-462 767

ARCTIC AEROMEDICAL LAB FORT WAINWRIGHT ALASKA

PROJECT COLD CASE.

(U)

DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT.,

FEB 65 26P MILAN, FREDERICK A. I

REPT. NO. AAL-TDR-64-23

PROJ: 8238

TASK: 823801

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*FLIGHT CLOTHING, PRESSURE SUITS),  
(\*PRESSURE SUITS, COLD WEATHER TESTS), FLIGHT CREWS,  
HIGH ALTITUDE, EFFECTIVENESS, SURVIVAL (PERSONNEL),  
ARCTIC REGIONS, SIMULATION

(U)

THE RESULTS OF PROJECT COLD CASE, AN INVESTIGATION OF THE COLD LAND SURVIVAL CAPABILITIES OF AIR FORCE PILOTS WEARING THE FULL PRESSURE HIGH ALTITUDE FLYING OUTFIT (A/P22S-2 AND A/P 22S-3) ARE PRESENTED IN THIS REPORT. SIX SUBJECTS WEARING THESE GARMENTS WERE PLACED UNDER SIMULATED SURVIVAL CONDITIONS IN A WOODED AREA OF INTERIOR ALASKA NEAR FAIRBANKS. AMBIENT AIR TEMPERATURES REACHED -30 F AND WERE BELOW -27 F FOR AT LEAST 50% OF THE TIME. ON THE THIRD DAY AIR TEMPERATURES ROSE AND REMAINED AT -10 F UNTIL THE CONCLUSION OF THE TEST. THE TEST LASTED FOR 72 HOURS. TWO SUBJECTS WEARING THE FULL PRESSURE SUIT WITHOUT ADDITIONAL CLOTHING SURVIVED FOR 11 AND 30 HOURS. AT THE END OF THIS TIME THEY WERE FATIGUED AND MODERATELY HYPOTHERMIC. TWO SUBJECTS WITH THE FULL PRESSURE SUIT PLUS A NINEPIECE DOWN-FILLED SURVIVAL OUTFIT (CLOTHING OUTFIT, ARCTIC SURVIVAL) SURVIVED FOR 52 AND 72 HOURS. THE 52-HOUR SURVIVOR SUFFERED A NONCOLD INJURY WHICH NECESSITATED HIS REMOVAL. TWO SUBJECTS WITH THE FULL PRESSURE SUIT PLUS AN EXPERIMENTAL ADC WALK-AROUND SLEEPING BAG SURVIVED FOR 72 HOURS EACH. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-467 823

SYSTEMS ENGINEERING GROUP WRIGHT-PATTERSON AFB OHIO

COMPARATIVE EVALUATION OF USAF STANDARD A/P22S-2 AND  
IMPROVED A/P22S-2A HIGH ALTITUDE, FULL PRESSURE  
FLYING OUTFITS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 65 61P GILLESPIE, KENT W. I  
REPT. NO. SEG-TR-65-9

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*FLIGHT CLOTHING, HIGH ALTITUDE),  
(\*PRESSURE SUITS, HIGH ALTITUDE), DESIGN, PRESSURE,  
THERMAL PROPERTIES, WEIGHT, DATA, TESTS, BODY  
TEMPERATURE, GAS FLOW (U)

IN THIS REPORT, THE A/P22S-2A IS COMPARED  
WITH THE A/P22S-2 OUTFIT. THE COMPONENTS AND  
FACTORS COMPARED INCLUDED: THE VISOR, WEIGHT, LEAK  
RATE AND PRESSURE RELIEF, REACH CAPABILITY, WORK  
SPACE, THERMAL AND ACOUSTICAL EVALUATION, BACK  
PRESSURE, AND ALTITUDE. THE COMMENTS OF THE  
PERSONS WEARING THE OUTFIT WERE ALSO CONSIDERED.  
RESULTS INDICATE THAT THE A/P22S-2A SHOWS  
SOME IMPROVEMENT OVER THE A/P22S-2. HOWEVER  
FURTHER IMPROVEMENTS ARE REQUIRED TO MAKE THE OUTFIT  
MORE OPERATIONALLY ACCEPTABLE. SPECIFIC  
RECOMMENDATIONS ARE MADE AS TO THOSE AREAS THAT NEED  
IMPROVEMENTS. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-474 980 15/5 6/17  
ARMY GENERAL EQUIPMENT TEST ACTIVITY FORT LEE VA

ENGINEERING TEST OF SPIKE RESISTANT INSOLE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 65 25P MANGUM, EDWIN W. ;  
PROJ: RDTE-1M643303D547 ,USATECOM-8-5-6010-01

UNCLASSIFIED REPORT

DESCRIPTORS: (SHOES, PROTECTIVE CLOTHING), ARMY  
EQUIPMENT, PERFORMANCE(ENGINEERING), SPIKES,  
PENETRATION, DEFORMATION, FRACTURE(MECHANICS), METAL  
PLATES, STEEL, BUCKLING, HEAT TRANSFER, LIFE EXPECTANCY,  
DESIGN, EFFECTIVENESS (U)

THE TEST WAS CONDUCTED TO DETERMINE THE TECHNICAL  
PERFORMANCE AND SAFETY CHARACTERISTICS OF THE SPIKE  
RESISTANT INSOLE WORN IN THE STANDARD TROPICAL BOOT  
WHEN SUBJECTED TO ACCELERATED USAGE. IT WAS FOUND  
THAT A MINIMUM FORCE 265 POUNDS WAS REQUIRED AT POINT  
OF CONTACT TO PIERCE THE COMBINED OUTSOLE OF THE  
TROPICAL COMBAT BOOT AND THE EXPERIMENTAL INSOLE.  
THE INSOLES ARE UNSATISFACTORY FROM A DURABILITY  
STANDPOINT, BEING HIGHLY SUSCEPTIBLE TO DEFORMATION  
AND CRACKING. THE INSOLES PRODUCE FOOT DISCOMFORT  
DUE TO EXCESSIVE HEATING OF THE SOLES OF THE FEET.  
THE INSOLES ARE SATISFACTORY FROM A SAFETY  
STANDPOINT. IT WAS RECOMMENDED THAT THE  
EXPERIMENTAL SPIKE RESISTANT INSOLE BE REDESIGNED TO  
PREVENT BUCKLING OF THE STEEL PLATE, THUS REDUCING  
CRACKING OF THE PLATE AND DIMINISHING THE HEAT  
TRANSMITTED TO THE FOOT PRODUCED BY FLEXING OF THE  
PLATE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-603 701

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

X-20A FULL-PRESSURE SUIT QUANTITATIVE PERFORMANCE,

(U)

MAY 64 50P BOWEN, J. D. :

PROJ: 6301

TASK: 630104

MONITOR: AMRL ,

TDR64 36

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AEROSPACE MEDICINE, ASTRONAUTS),  
(\*PRESSURE SUITS, EXPOSURE SUITS), (\*EXPOSURE SUITS,  
PRESSURE SUITS), MOTOR REACTIONS, HANDS, PERFORMANCE  
(HUMAN), SPACE ENVIRONMENTS, SPACECRAFT CABINS,  
SIMULATION, PHYSICAL PROPERTIES, ACOUSTIC PROPERTIES,  
WEIGHT, VISION

(U)

IDENTIFIERS: X-20 SPACECRAFT

(U)

A SERIES OF EXPERIMENTAL PROCEDURES WAS  
ACCOMPLISHED TO DEMONSTRATE AND MEASURE THE  
PROTECTION X-20A (DYNASOAR) PILOTS OBTAIN  
BY WEARING THEIR CUSTOM FITTED PRESSURE GARMENTS  
WHILE EXPOSED TO SIMULATED MISSION CONDITIONS.  
MISSION CONDITIONS WERE SIMULATED TO THE EXTENT  
POSSIBLE WITH AVAILABLE ALTITUDE AND TEMPERATURE TEST  
FACILITIES. PHYSICAL CHARACTERISTICS OF THE GARMENTS  
WERE DETERMINED SUCH AS WEIGHT, PRESSURE DROP WITH  
FLOW, DIMENSIONAL STABILITY, VISUAL FIELDS, AND  
ACOUSTICAL ATTENUATION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-603 705

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

FINGER DEXTERITY OF THE PRESSURE-SUITED SUBJECT, (U)

MAY 64 16P WALK, DIETER E. :  
PROJ: 7184  
TASK: 718408  
MONITOR: AMRL , TDR64 41

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (AEROSPACE MEDICINE, ASTRONAUTS),  
(GLOVES, PRESSURE SUITS), (MOTOR REACTIONS, HANDS),  
PSYCHOMOTOR TESTS, PERFORMANCE (HUMAN) (U)

THE STUDY ATTEMPTS TO ESTABLISH AN OBJECTIVE  
BASELINE FOR EVALUATING THE FUNCTIONAL MOBILITY OF  
PRESSURE GLOVES. THE PURDUE PEGBOARD  
DEXTERITY TEST WAS EMPLOYED TO MEASURE HAND  
DEXTERITY UNDER THREE CONDITIONS: (1) SUBJECTS  
BAREHANDED, BUT WEARING AN UNPRESSURIZED A/P22S-2  
FULL-PRESSURE SUIT ENSEMBLE; (2) SUBJECTS GLOVED  
(WAK-3/P-22S-2) AND SUITED, BUT NOT  
PRESSURIZED; (3) SUBJECTS GLOVED, SUITED, AND  
PRESSURIZED TO 2.5 PSI. THE PURDUE PEGBOARD  
DEXTERITY TEST WAS FOUND TO BE A DELICATE  
INDICATOR OF HAND DEXTERITY IN THE TEST CONDITIONS.  
THE TEST RESULTS SHOW A MARKED REDUCTION IN  
DEXTERITY EVEN WITH THE GLOVES AND SUIT UNINFLATED,  
AND AN ADDITIONAL LOSS WHEN GLOVES AND SUIT WERE  
INFLATED. THE DEGREE OF LOSS OF DEXTERITY IS  
BELIEVED TO PROVIDE AN OBJECTIVE MEASURE WHEREBY ONE  
OPERATIONAL ASPECT OF PRESSURE GLOVES MAY BE  
EVALUATED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-606 039

ANTIOCH COLL YELLOW SPRINGS OHIO

HEIGHT-WEIGHT SIZING OF PROTECTIVE GARMENTS, BASED ON  
JAPANESE AIR SELF-DEFENSE FORCE PILOT DATA, WITH FIT-  
TEST RESULTS. (U)

JUL 64 1V MCCONVILLE, JOHN T. ;  
ALEXANDER, MILTON ; KRAMER, JAMES H. ; FRITZ,  
EUGENE A. ;  
CONTRACT: AF33 616 6792 , AF33 657 9201  
PROJ: 7184  
TASK: 718408  
MONITOR: AMRL , TOR64 66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROTECTIVE CLOTHING, ANTHROPOMETRY),  
(FLIGHT CLOTHING, TESTS), EXPOSURE SUITS, PRESSURE  
SUITS, ARMED FORCES (FOREIGN), AIR FORCE, JAPAN,  
STATISTICAL DATA (U)

THE STUDY DISCUSSES THE DEVELOPMENT AND TEST OF A  
FOURSIZE HEIGHT-WEIGHT SIZING PROGRAM OF PARTIAL  
PRESSURE AND EXPOSURE SUITS DESIGNED FOR THE  
JAPANESE AIR SELF-DEFENSE FORCE. THE  
SIZING PROGRAM IS BASED UPON AN ANTHROPOMETRIC SURVEY  
OF OVER 200 SUBJECTS, CONDUCTED AT FIVE AIR BASES  
THROUGHOUT JAPAN DURING THE SPRING OF 1961. THE  
STATISTICAL RATIONALE USED IN DEVISING THE HEIGHT-  
WEIGHT PROGRAM IS PRESENTED ALONG WITH THE ANALYSIS  
OF THE ANTHROPOMETRIC DATA. TWO GARMENTS, THE CSU  
- 9/P PARTIAL PRESSURE ASSEMBLY AND THE CWU  
- 13/P EXPOSURE GARMENT, WERE FABRICATED IN  
ACCORDANCE WITH THE DEVELOPED SIZING PROGRAM. A  
FIT-TEST OF THESE GARMENTS WAS CONDUCTED AT  
HAMAMATSU AND TACHIKAWA AIR BASES, JAPAN,  
IN APRIL 1963. THE RESULTS OF THE FIT-TEST  
SERVED TO VALIDATE THE SOUNDNESS OF THE BASIC SURVEY  
DATA AND SUBSEQUENT DEVELOPMENT OF THE  
HEIGHTWEIGHT SIZING PROGRAM. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-608 088

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE  
DIV

EMERGENCY BREATHING AND SUIT PRESSURIZATION  
SYSTEM.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 31 MAY 63-31 MAR 64.

SEP 64 47P MILLER, R. A. WITHEY, D. J. I  
CONTRACT: AF33 667 11345  
PROJ: 6373  
TASK: 637305  
MONITOR: AMRL . TDR64 60

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*LIFE SUPPORT, RESPIRATION),  
(\*RESPIRATION, LIFE SUPPORT), (\*PRESSURE SUITS,  
RESPIRATION), (\*PRESSURE SUITS, RESPIRATION), (\*PRESSURE  
BREATHING, ASTRONAUTS), CLOSED ECOLOGICAL SYSTEMS,  
CARBON DIOXIDE, OXYGEN, VENTILLATION, HUMIDITY, HEAT  
EXCHANGERS, TEMPERATURE, CONTROL SYSTEMS, FLIGHT  
CLOTHING, EQUATIONS (U)

THE DESIGN AND FABRICATION OF AN EMERGENCY  
BREATHING AND SUIT PRESSURIZATION SYSTEM  
(EBSPS), CAPABLE OF SUSTAINING THREE FULL-PRESSURE  
SUITED CREWMEN WITHIN THE AEROSPACE MEDICAL  
RESEARCH LABORATORIES LIFE SUPPORT SYSTEM  
EVALUATOR, HAS BEEN INVESTIGATED. TWO OPERATING  
MODES ARE PROVIDED. ONE, WHEN THE EVALUATOR IS  
PRESSURIZED, THE EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM OPERATES AS AN OPENLOOP  
SYSTEM AND VENTILATES THE PRESSURE SUIT WITH THE  
AMBIENT AIR. TWO, WHEN THE EVALUATOR IS  
DEPRESSURIZED, THE EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM OPERATES AS A CLOSED  
ENVIRONMENTAL CONTROL SYSTEM, AND PROVIDES THE  
CREWMEN WITH A HABITABLE ATMOSPHERE. IN THIS  
LATTER MODE, THE SYSTEM REGULATES THE SUIT PRESSURE,  
THE CO2 PARTIAL PRESSURE, RELATIVE HUMIDITY,  
COMPOSITION (100% O2), AND TEMPERATURE OF THE  
VENTILATING AIR, AND SUPPLIES OXYGEN FOR BREATHING  
AND LEAKAGE MAKE UP AS REQUIRED. IN ALL MODES, THE  
EMERGENCY BREATHING AND SUIT PRESSURIZATION  
SYSTEM REGULATES THE FLOW OF VENTILATING ATMOSPHERE  
THROUGH THE PRESSURE SUITS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-608 139

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

RESPIRATORY AND MICROCLIMATE TEMPERATURES WITHIN THE  
PARKA HOOD IN EXTREME COLD. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

SEP 64 15P VEGHTE, JAMES H. ;

PROJ: 7164

TASK: 716409

MONITOR: AMRL . TDR64 79

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PROTECTIVE CLOTHING, COLD WEATHER TESTS),  
(\*RESPIRATION, COLD WEATHER TESTS), (\*FROSTBITE, COLD  
WEATHER TESTS), HEAD(ANATOMY), NOSE(ANATOMY),  
FACE(ANATOMY), POLAR REGIONS, ARCTIC REGIONS,  
EXPOSURE(PHYSIOLOGY), EXERCISE(PHYSIOLOGY), RELAXATION,  
AIR, TEMPERATURE, TEMPERATURE SENSITIVE ELEMENTS,  
THERMOCOUPLES, AIR FORCE PERSONNEL (U)

IDENTIFIERS: MICROCLIMATE TEMPERATURES,  
RELAXATION (U)

THE STANDARD AIR FORCE ARCTIC CLOTHING WAS WORN  
TO DETERMINE IF IT PROVIDED ADEQUATE HEAD PROTECTION  
IN EXTREMELY COLD TEMPERATURES. SUBJECTS WERE  
EXPOSED TO -62C FOR 40 TO 60 MINUTES IN AN  
ENVIRONMENTAL CHAMBER. POSSIBLE RESPIRATORY  
PROBLEMS AND FROSTBITE OF THE CHEEKS AND NOSE WERE  
THE PRIMARY CONCERN. SUBJECTS RESTING OR  
EXERCISING EXPERIENCED NO RESPIRATORY OR FROSTBITE  
PROBLEMS. AIR IN THE HOOD RAPIDLY APPROACHED  
AMBIENT CONDITIONS, BECAUSE OF THE EXPULSIVE NATURE  
OF EXPIRATION AND THE STRONG CONVECTIVE AIR MOVEMENT.  
EXERCISE INCREASED THE MICROCLIMATE TEMPERATURES IN  
THE HOOD. THE EXISTING HOOD DESIGN WAS FOUND TO  
PROVIDE ADEQUATE HEAD PROTECTION FOR AF PERSONNEL  
AT MORE EXTREME TEMPERATURES THAN ARE NORMALLY  
ENCOUNTERED IN THE ARCTIC. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-609 164

NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA AERONAUTICAL  
MATERIALS LAB

METHODS OF SANITIZING AND DEODORIZING RUBBERIZED  
FABRIC AND PRODUCING TEMPORARY ANTI-STATIC FILMS ON  
SYNTHETIC MATERIALS. (U)

OCT 64 10P MACKENZIE, W. E. I  
REPT. NO. NAEC-AHL-2050

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*RUBBER COATINGS, FLIGHT CLOTHING),  
(\*CLEANING COMPOUNDS, TEXTILES), (\*TEXTILES, CLEANING  
COMPOUNDS), (\*FLIGHT CLOTHING, CLEANING), (\*AMMONIUM  
COMPOUNDS, CLEANING COMPOUNDS), MATERIALS, STATIC  
ELECTRICITY, INHIBITION, ODORS, TOILET ARTICLES (U)

AN INVESTIGATION OF SANITIZING, DEODORIZING, AND  
ANTISTATIC AGENTS IS DESCRIBED. RECOMMENDATIONS  
ARE MADE FOR THE USE OF QUATERNARY AMMONIUM COMPOUNDS  
FOR SANITIZING AND DEODORIZING RUBBERIZED FLIGHT  
CLOTHING AND FOR THE USE OF NON-IONIC DETERGENTS FOR  
RENDERING SYNTHETIC MATERIALS ANTI-STATIC.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-609 206

CHANCE VOUGHT CORP DALLAS TEX

INTEGRATED BACK-PACK MANEUVERING UNIT PROPULSION  
STUDY AND EXHAUST PLUME HEATING ANALYSIS. (U)

DESCRIPTIVE NOTE: ASTRONAUTICS ENGINEERING REPT. FOR DEC  
62-JUN 63,

SEP 63 237P PRATT ,C. L. 1GOODNIGHT,F. H. 1  
REPT. NO. CVC-00.252  
CONTRACT: AF33 657 10408  
PROJ: 8170  
TASK: 817008  
MONITOR: ASD , TOR63 729

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART  
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST  
AVAILABLE COPY.

DESCRIPTORS: (\*ASTRONAUTS, SPACEBORNE), (\*ROCKET MOTORS  
(LIQUID PROPELLANT), PORTABLE EQUIPMENT), (\*FLIGHT  
CLOTHING, SPACE NAVIGATION), (\*SPACE PROPULSION, FLIGHT  
CLOTHING), FEASIBILITY STUDIES, MONOPROPELLANTS,  
HYDROGEN PEROXIDE, EXHAUST GASES, HEAT TRANSFER, SPACE  
ENVIRONMENTS, HALOGENATED HYDROCARBONS, SPECIFIC  
IMPULSE, PERFORMANCE (ENGINEERING), GAS GENERATING  
SYSTEMS, MILITARY PERSONNEL, ROCKET PROPULSION, WEIGHT  
MANUEVERABILITY (U)  
IDENTIFIERS: ASTRONAUT MANEUVERING UNITS (U)

TWO TECHNICAL PROBLEMS RELATED TO THE ASTRONAUT  
MANEUVERING UNIT ARE TREATED. THE PROBLEMS  
ARE: (1) HEATING ASSOCIATED WITH THE IMPINGEMENT  
OF THE ROCKET EXHAUST ON SPACE SUIT SURFACES, AND  
(2) THE PERFORMANCE OF INERT HEATED GASES AS  
PROPELLANTS. METHODS FOR PREDICTING ROCKET EXHAUST  
HEATING RATES IN SPACE ARE PRESENTED AND RESULTS ARE  
COMPARED WITH TEST DATA. EFFECTS OF PLUME HEATING  
OF AN H2O2 MONOPROPELLANT EXHAUST FROM A TYPICAL  
MOTOR PLACEMENT IS SUMMARIZED. THE RESULTS OBTAINED  
FROM SEVERAL HEATED GAS PROPELLANT TESTS ARE REPORTED  
AND COMPARED TO THEORETICALLY PREDICTED PERFORMANCE.  
THE ANALYTICAL AND EXPERIMENTAL TECHNIQUES UTILIZED  
ARE DISCUSSED IN DETAIL. THE REFRIGERANTS, FREON  
115 AND FREON C318 SHOW THE HIGHEST DENSITY  
IMPULSE AND LOWEST WEIGHT. FREON 115 IS  
RECOMMENDED FOR USE DUE TO THE LOWER STORAGE  
TEMPERATURE REQUIRED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-659 863

NORTH AMERICAN AVIATION INC LOS ANGELES CALIF

MOMENTS OF INERTIA AND CENTERS OF GRAVITY OF THE  
LIVING HUMAN BODY ENCUMBERED BY A FULL-PRESSURE SUIT(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUL-DEC 63:  
NOV 64 62P DUBOIS, J. ISANTSCHI, W.  
R. WALTON, D. M. ISCOTT, C. O. MAZY, F.  
W. I

REPT. NO. NA-64-527  
CONTRACT: AF33 657 11619  
PROJ: AF-7184  
TASK: 718408  
MONITOR: AMRL TR-64-110

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ASTRONAUTS, PRESSURE SUITS), (\*PRESSURE  
SUITS, ASTRONAUTS), (\*CENTER OF GRAVITY, ASTRONAUTS),  
MOMENT OF INERTIA, HUMAN FACTORS ENGINEERING,  
ANTHROPOMETRY, ANATOMY, HUMAN BODY, HUMANS,  
WEIGHTLESSNESS, POSTURE(PHYSIOLOGY), RESPIRATION, AIR  
FORCE PERSONNEL, OXYGEN CONSUMPTION, RESPIRATION,  
STATISTICAL DATA, CORRELATION TECHNIQUES (U)

THE CENTER OF GRAVITY AND THE MOMENTS OF INERTIA OF  
EACH OF 19 MALE SUBJECTS, REPRESENTATIVE IN STATURE  
AND WEIGHT OF THE U. S. AIR FORCE POPULATION,  
WERE DETERMINED. TWO BODY POSITIONS: SITTING AND  
RELAXED; AND THREE MODES OF DRESS: NUDE, SUITED-  
UNPRESSURIZED, AND SUITEDPRESSURIZED WERE  
INVESTIGATED. THE THEORETICAL ACCURACY OF THE  
EXPERIMENTAL PROCEDURES, BASED ON A COMPOUND  
PENDULUM, RANGED FROM 2 TO 8 PERCENT, DEPENDING ON  
BODY POSITION AND AXIS. THE MOMENTS OF INERTIA  
WERE FOUND TO VARY SIGNIFICANTLY BETWEEN BODY  
POSITIONS AND BETWEEN NUDE AND SUITED CONDITIONS.  
CORRELATION COEFFICIENTS BETWEEN THE MOMENTS OF  
INERTIA AND STATURE AND WEIGHT EXCEEDED 0.9. FIFTY  
ANTHROPOMETRIC DIMENSIONS AND FRONTAL AND PROFILE  
PHOTOGRAPHS WERE OBTAINED ON EACH SUBJECT TO SERVE AS  
THE BASIS FOR ADDITIONAL BIODYNAMIC ANALYSES.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-609 937

NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA AEROSPACE CREW  
EQUIPMENT LAB

METABOLIC MECHANISMS OF MAN IN THE FULL PRESSURE  
SUIT. PHYSIOLOGICAL COST OF DONNING A FULL PRESSURE  
SUIT, (U)

DEC 64 25P HENDLER, EDWIN IDERY, DONALD  
W. MILLER, NFIL ;  
PROJ: 32  
TASK: R360FR101 200 1R011 0101  
MONITOR: NAEC ACEL , 527

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*METABOLISM, AEROSPACE MEDICINE),  
(\*PRESSURE SUITS, STRESS (PHYSIOLOGY)), OXYGEN  
CONSUMPTION, PULSE RATE, ENERGY, PHYSIOLOGY, TIME  
STUDIES, EFFECTIVENESS, PROTECTIVE CLOTHING, VOLUME,  
EXERCISE (PHYSIOLOGY), NAVAL PERSONNEL (U)  
IDENTIFIERS: MARK-4 PRESSURE SUITS (U)

EXPERIENCED SUBJECTS DONNED THE U. S. NAVY MK-4  
FULL PRESSURE SUIT UNDER CONDITIONS OF TIME AND  
DONNING SPACE LIMITATIONS. DIRECT AND INDIRECT  
MEASURES OF PHYSIOLOGICAL COST WERE MADE USING OXYGEN  
CONSUMPTION AND HEART RATE, RESPECTIVELY.  
APPROXIMATELY 1 KCAL OF ENERGY PER KG OF BODY  
WEIGHT WAS EXPENDED IN THE DONNING TASK. DONNING  
VOLUMES AS SMALL AS ABOUT 7 TIMES THE VOLUME OF THE  
SUBJECT'S BODY ACCOMMODATED THE DRESSING PROCEDURE  
WITH NO APPARENT INCREASES IN DONNING TIME NOR IN  
ENERGY EXPENDITURE. SUIT FIT WAS FOUND TO HAVE AN  
IMPORTANT EFFECT ON BOTH EFFORT AND TIME REQUIRED FOR  
DONNING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-410 519

RAND DEVELOPMENT CORP CLEVELAND OHIO

THE USE OF LINES OF NONEXTENSION TO IMPROVE MOBILITY  
IN FULL-PRESSURE SUITS. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 63-MAR 64,

NOV 64 44P IBERALL, ARTHUR S. I

CONTRACT: AF33 657 10992

PROJ: 7184

TASK: 718408

MONITOR: AMRL , TR64 118

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PRESSURE SUITS, HUMAN FACTORS  
ENGINEERING), (•ANTHROPOMETRY, PRESSURE SUITS),  
PERFORMANCE (HUMAN), PROTECTIVE CLOTHING, ANATOMY,  
MOTION, SKIN(ANATOMY), ELASTIC PROPERTIES, AVIATION  
PERSONNEL, ASTRONAUTS, DESIGN, MOBILE (U)

AN IMPORTANT OBJECTIVE IN THE DEVELOPMENT OF A  
FULLPRESSURE SUIT FOR A HUMAN BEING IS TO PERMIT THE  
WEARER FULL MOBILITY WITHOUT INTERFERING WITH  
PHYSICAL CAPABILITY. ALTHOUGH THE HUMAN SKIN IS  
STRETCHED DURING BODY MOTION, THERE IS VIRTUALLY NO  
STRETCH ALONG CERTAIN LINES, HERE CALLED 'LINES OF  
NONEXTENSION'. THE INVESTIGATION WAS UNDERTAKEN  
TO DETERMINE THE EFFICACY OF UTILIZING LINES OF  
NONEXTENSION TO PROVIDE NATURAL MOBILITY AND MINIMAL  
BALLOONING IN FULL-PRESSURE SUITS. THE PROGRAM OF  
INVESTIGATION PURSUED WAS: (1) TO MAP OUT THESE  
LINES OF NONEXTENSION, (2) TO TEST WHETHER STRING  
ELEMENTS OF HIGH ELASTIC MODULUS, A CONNECTED  
NETWORK, COULD BE LAID ALONG THESE LINES OF  
NONEXTENSION WITHOUT PROVIDING ANY CONSTRAINT TO  
MOBILITY, (3) TO OBTAIN A HIGHLY MOBILE PRESSURE-  
RETAINING LAYER TO BE CONSTRAINED BY THE NET, AND  
(4) TO CONSTRUCT AND DEMONSTRATE AN ENTIRE  
PRESSURE-RETAINING GARMENT SYSTEM THAT MAKES USE OF  
ALL NECESSARY LAYERS AND STRING ELEMENTS IN A  
COMPLETELY CONNECTED, NETTED COVERING FOR THE BODY,  
WITH MINIMAL CONSTRAINT TO MOBILITY UP TO 5 PSI. A  
MOBILE, PRESSURE-RETAINING GARMENT WAS DEVELOPED BY  
BUILDING EACH STRUCTURAL, FUNCTIONAL LAYER INTO THE  
COMPOSITE GARMENT IN ACCORDANCE WITH THE BASIC DESIGN  
THEORY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-613 189

ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK  
MASS

THE ARCTIC SOLDIER: POSSIBLE RESEARCH SOLUTIONS FOR  
HIS PROTECTION, (U)

64 22P GOLDMAN, RALPH F. I

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ARMY PERSONNEL, ARCTIC REGIONS), (\*ARCTIC  
REGIONS, ARMY PERSONNEL), (\*PROTECTIVE CLOTHING, ARMY  
PERSONNEL), (\*ACCLIMATIZATION, ARMY PERSONNEL),  
SCIENTIFIC RESEARCH, SHELTERS, HEATING, FEET, HANDS,  
CLIMATE, EXPOSURE SUITS, HEAT PRODUCTION (BIOLOGY),  
GLOVES, SHOES (U)  
IDENTIFIERS: CLIMATE, COLD TOLERANCE (U)

THE RESULTS ARE SUMMARIZED OF A RESEARCH PROGRAM ON  
AUXILIARY HEATING WITH MINIMUM POWER. THE PROGRAM  
ESTABLISHED THE FEASIBILITY OF 2 APPROACHES:  
AUXILIARY HEATING FOR THE EXTREMITIES OF THE BODY  
AND A CONDITIONED AIR-CLOTHING SYSTEM THAT PROBABLY  
HAS PRIMARY APPLICATION IN HOT AND/OR TOXIC  
ENVIRONMENTS BUT COULD HANDLE COLD EASILY.  
PROTECTION OF THE INACTIVE SOLDIER IN EXTREMELY  
COLD ENVIRONMENTS WAS RESOLVED IN TERMS OF THE  
PARAMETERS OF WEIGHT AND COST. A 7-LB PROTOTYPE  
SYSTEM WAS ADEQUATE TO MEET MILITARY CHARACTERISTICS  
OF PROVIDING 8 HOURS OF PROTECTION FOR THE INACTIVE  
MAN AT -40 DEGREES F WITH A 3 MILE/HOUR WIND.  
IMPROVEMENT IN THE WEIGHT FACTOR CAN BE ANTICIPATED  
AS POWER SOURCE DEVELOPMENT IMPROVES OVER THE CURRENT  
16 WATT-HOURS/POUND. A MORE IMMEDIATE USE OF  
AUXILIARY HEATED HANDWARE AND FOOTWEAR IS IN AREAS  
WHERE POWER IS AVAILABLE SUCH AS MILITARY VEHICLES,  
RADIO AND RADAR EQUIPMENT, AND MISSILES. THE  
AUXILIARY HEATING SYSTEM DEVELOPED IS COMPATIBLE WITH  
A 12- OR 24-V AC OR DC POWER SOURCE. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-613 597

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

A COMPARISON OF THREE FULL-PRESSURE SUITS IN TERMS OF  
CONTROL ACTIVATION TIME. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR NOV 63-FEB 64,  
DEC 64 22P SHARP, EARL D. I  
REPT. NO. TR-64-126  
PROJ: 7184  
TASK: 718402

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PRESSURE SUITS, MANEUVERABILITY),  
(\*ASTRONAUTS, POSITIONING REACTIONS), HUMAN FACTORS  
ENGINEERING, MOTION, INSTRUMENTATION, TIME STUDIES,  
CONTROL KNOBS, TOGGLE SWITCHES, SIMULATION (U)

THREE PRESSURE SUITS, BOTH PRESSURIZED AND  
UNPRESSURIZED, WERE COMPARED ON THE BASIS OF TIMES  
TAKEN BY TWO SUBJECTS TO INITIATE ACTION AND TO REACH  
TO AND OPERATE CONTROLS LOCATED IN VARIOUS POSITIONS  
IN A SIMULATED WORKSPACE. THE SUITS COMPARED WERE  
THE APOLLO PHASE B, THE GEMINI G2C-1, AND  
THE APOLLO 1960 STATE-OF-THE-ART. THE  
CONTROLS USED WERE KNOBS, TOGGLE SWITCHES, AND  
PUSHBUTTONS. THE WORK AREA INVESTIGATED WAS  
SEMICIRCULAR, EXTENDING LEFT AND RIGHT 78 DEGREES, 34  
TO 49 INCHES ABOVE THE FLOOR, AT A DISTANCE OF  
APPROXIMATELY 2 FEET. AVERAGE TIMES FOR EACH  
COMBINATION OF SUIT, SUIT CONDITION (PRESSURIZED OR  
UNPRESSURIZED), CONTROL TYPE, CONTROL LOCATION, AND  
HAND USED ARE PRESENTED. NO SUIT APPEARED TO BE  
UNEQUIVOCALLY SUPERIOR. TOTAL TIME TO INITIATE  
ACTION AND TO REACH TO AND OPERATE TOGGLE SWITCHES  
AND PUSHBUTTONS WAS TYPICALLY, ALTHOUGH NOT  
UNIVERSALLY, SHORTER WHEN WEARING THE APOLLO 1960  
STATE-OF-THE-ART SUIT. TOTAL TIME TO INITIATE  
ACTION AND TO REACH TO AND OPERATE KNOBS WAS  
TYPICALLY, ALTHOUGH NOT UNIVERSALLY, SHORTER WHEN  
WEARING THE GEMINI G2C-1 SUIT; HOWEVER, NOT ALL  
LOCATIONS COULD BE REACHED WHEN WEARING THIS SUIT.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-614 241

NAVAL MEDICAL RESEARCH INST BETHESDA MD

A REVIEW OF CURRENT CONCEPTS AND PRACTICES USED TO  
CONTROL BODY HEAT LOSS DURING WATER IMMERSION. (U)

64 33P BECKMAN, E. L. I  
REPT. NO. NR-005.13-4001.06 ,R-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED TO THE AEROSPACE MEDICAL  
PANEL GENERAL ASSEMBLY OF ADVISORY GROUP FOR  
AERONAUTICAL RESEARCH AND DEVELOPMENT (14TH), HELD  
AT LISBON, PORTUGAL, 12 SEP 64. AVAILABLE COPY WILL  
NOT PERMIT FULLY LEGIBLE REPRODUCTION. REPRODUCTION WILL  
BE MADE IF REQUESTED BY USERS OF DDC. COPY IS AVAILABLE  
FOR PUBLIC SALE.

DESCRIPTORS: (\*PROTECTIVE CLOTHING,  
SURVIVAL(PERSONNEL)), (\*SURVIVAL(PERSONNEL), PROTECTIVE  
CLOTHING), (\*UNDERWATER CLOTHING, THERMAL INSULATION),  
BODY TEMPERATURE, HYPOTHERMIA, HEAT PRODUCTION  
(BIOLOGY), TOLERANCES (PHYSIOLOGY), STRESS (PHYSIOLOGY),  
WATER, MOISTURE PROOFING, THERMAL CONDUCTIVITY, WOOLEN  
TEXTILES, SYNTHETIC RUBBER, FATS, MUSCLES, EXTREMITIES,  
SWIMMING, GLOVES, SHOES, EXPOSURE SUITS (U)  
IDENTIFIERS: COLD TOLERANCE, IMMERSION (U)

THE PROBLEM OF PROVIDING ADEQUATE CLOTHING FOR  
PERSONNEL WHO EITHER DURING NORMAL OPERATIONS OR  
ACCIDENTALLY ARE IMMERSSED IN COLD WATER HAS CONTINUED  
TO CHALLENGE CLOTHING MANUFACTURERS. IN THE PAST  
DECADE THE DEVELOPMENT OF FOAMED PLASTICS AND OTHER  
CLOTHING MATERIALS HAS OFFERED NEW POSSIBILITIES.  
LIKEWISE ADVANCES IN ENERGY CONVERSION AND STORAGE  
SYSTEMS OFFER NEW SOLUTIONS TO THIS CRITICAL  
OPERATIONAL PROBLEM. THE BASIC PHYSICAL AND  
PHYSIOLOGICAL CONCEPTS WHICH RELATE TO THE PROBLEM OF  
LIMITING THERMAL LOSS FROM THE IMMERSSED HUMAN WILL BE  
REVIEWED. NEWER TECHNICAL DEVELOPMENTS IN  
INSULATIVE CLOTHING AND SUPPLEMENTAL HEATING SYSTEMS  
WILL BE DISCUSSED WITH RELATION TO THESE BASIC  
CONCEPTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-616 952

AIR FORCE SYSTEMS COMMAND WASHINGTON D C

WILEY POST: FIRST TEST OF HIGH ALTITUDE PRESSURE  
SUITS IN THE UNITED STATES.

(U)

DESCRIPTIVE NOTE: HISTORICAL NOTE.

SEP 64 6P WILSON, CHARLES L. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN ARCH ENVIRON HEALTH V10  
P805-10 MAY 1965 (COPIES AVAILABLE FROM AUTHOR: HQ  
AFSC (SCTB) U.S.A.F. ANDREWS AIR FORCE BASE,  
WASHINGTON, D. C., 20331).

DESCRIPTORS: (•PRESSURE SUITS, TESTS), HIGH ALTITUDE,  
AVIATION PERSONNEL, UNITED STATES, DESIGN, TEXTILES,  
RUBBER COATINGS, FLIGHT TESTING, LIQUEFIED GASES,  
OXYGEN, HISTORY

(U)

THREE DIFFERENT HIGH ALTITUDE SUITS WERE DESIGNED  
AND TESTED FOR WILEY POST. THE REPORT CONTAINS  
A PHOTOGRAPH OF EACH OF THESE THREE SUITS. TWO LOW  
PRESSURE CHAMBER TESTS WERE CONDUCTED USING THE FINAL  
SUIT. THESE REPRESENT THE FIRST UNITED STATES  
TESTS OF A HUMAN SUBJECT IN A HIGH ALTITUDE PRESSURE  
SUIT AT LOW BAROMETRIC PRESSURES. POST EMPLOYED  
HIS SUIT ON AT LEAST TEN AND POSSIBLY 17 FLIGHTS AND  
USED LIQUID OXYGEN ON ALL SUCH FLIGHTS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-618 715

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

ACOUSTICAL EVALUATION OF X-20A DYNA-SOAR FULL-  
PRESSURE SUIT ASSEMBLIES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 65 30P SOMMER, HENRY C. HILLE,  
HAROLD K. ;  
REPT. NO. AMRL-TR-65-86  
PROJ: 7231  
TASK: 723103

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PRESSURE SUITS, ACOUSTIC PROPERTIES),  
(•ASTRONAUTS, AUDITORY PERCEPTION), HELMETS, NOISE,  
SOUND TRANSMISSION, ATTENUATION, TRAINING, FLIGHT  
CLOTHING, EXPOSURE SUITS, AUDITORY SIGNALS, SPACECRAFT  
CABINS, EARPHONES, MICROPHONES, COMMUNICATION EQUIPMENT,  
BOOST GLIDE VEHICLES (U)  
IDENTIFIERS: EVALUATION, X-20 SPACECRAFT (U)

DATA ON THE SUBJECTIVE REAL-EAR ATTENUATION  
AT THRESHOLD (REAT) AND NOISE TRANSMISSION  
MEASUREMENTS AT THE HELMET MICROPHONE AND EAR CUP  
WERE OBTAINED FOR TWO MODELS OF THE SUIT ASSEMBLY.  
THE FIRST MODELS TESTED AND EVALUATED WERE CALLED  
THE 'TRAINING' MODELS AND WERE CUSTOM FITTED FOR EACH  
OF THE DYNA-SOAR PILOTS. DURING THE TEST  
PROGRAM, IN WHICH THE PILOTS WERE ACTING AS  
EXPERIMENTAL SUBJECTS, THE X-20A PROGRAM WAS  
CANCELLED AND ONLY FOUR OF THE SIX PILOTS COMPLETED  
THE TESTS. THE RESULTS OF THIS EVALUATION REVEALED  
THAT VARIOUS FEATURES OF THE ASSEMBLY WERE  
UNSATISFACTORY; THEREFORE, AN IMPROVED VERSION WAS  
FABRICATED TO CORRECT THE UNDESIRABLE DEFICIENCIES.  
FROM THE ACOUSTICAL STANDPOINT, THE ASSEMBLY WAS  
REDESIGNED TO ELIMINATE A RESONANCE AT 250 CPS WITH  
THE VISOR OPEN. THIS IMPROVED SECOND MODEL WAS  
CALLED THE 'FLIGHT READY' MODEL. THE REPORT  
DESCRIBES A COMPARATIVE ACOUSTICAL EVALUATION OF THE  
TRAINING MODELS AND FLIGHT-READY MODELS OF THE SUIT  
ASSEMBLIES. EVALUATION CONSISTED OF (1) THE  
SUBJECTIVE MEASUREMENT OF REALEAR ATTENUATION  
AT THRESHOLD (REAT) AND (2) THE MEASUREMENT  
OF TRANSMISSION LOSS THROUGH THE HELMET AT THE HELMET  
MICROPHONE AND EAR CUP POSITION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-619 029

LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF

STUDY OF HUMAN PERFORMANCE IN A MARK IV PRESSURE  
SUIT. (U)

NOV 64 38P MILLER, A. K. ; LINCOLN, R. S.

REPT. NO. 6-62-64-19

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PRESSURE SUITS, MANEUVERABILITY),  
(•PERFORMANCE(HUMAN), SPACE CREWS), MOTOR REACTIONS,  
PERFORMANCE(HUMAN), COMPUTERS, OSCILLOSCOPES, ROTATION,  
GLOVES, INHIBITION, DESIGN, ANTHROPOMETRY, TRACKING (U)  
IDENTIFIERS: MARK-4 PRESSURE SUITS (U)

TWO SUBJECTS WEARING MARK IV PRESSURE SUITS,  
UNDER BOTH THE PRESSURIZED AND UNPRESSURIZED  
CONDITION, WERE TESTED ON SEVERAL PERFORMANCE TASKS.  
THE PURPOSE OF THE STUDY WAS TO PROVIDE AN  
EVALUATION OF PERFORMANCE TASKS UNDER SUIT  
CONDITIONS. RESULTS OF THE STUDY INDICATED THAT  
THE TASKS CAN BE SUCCESSFULLY PRESENTED ON AN  
OSCILLOSCOPE UNDER COMPUTER CONTROL TO EVALUATE  
PERFORMANCE CAPABILITY OF SUITED CREW MEMBERS. TWO  
INTERESTING EFFECTS IDENTIFIED IN THE EXPERIMENTAL  
DATA WERE RELATED TO CHARACTERISTICS OF THE PRESSURE  
SUIT. WHEN PRESSURIZED: (1) THE SUBJECTS WERE  
HINDERED IN THE PERFORMANCE OF A TRACKING TASK  
BECAUSE THEY WERE UNABLE TO ROTATE THEIR WRISTS, AND  
(2) ONE SUBJECT HAD DIFFICULTY OPERATING PUSH  
BUTTONS, WHICH WERE SEPARATED BY 5/8 IN. BETWEEN  
EDGES, BECAUSE OF THE CHARACTERISTICS OF THE GLOVES  
INCLUDED WITH THE MARK IV SUIT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-620 099

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

SPACE CLOTHING OF SUBJUGATORS OF OUTER SPACE: (U)

JUN 65 8P KRICHAGIN, V. I  
REPT. NO. FTD-TT-65-604  
MONITOR: TT : 65-63335

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
MEDITSINSKAYA GAZETA (USSR) V28 P2 MAR 28 1965.

DESCRIPTORS: (•PRESSURE SUITS, ASTRONAUTS), (•EXPOSURE  
SUITS, ASTRONAUTS), AEROSPACE MEDICINE, SPACE  
ENVIRONMENTS, DESIGN, USSR (U)

TRANSLATION OF RUSSIAN RESEARCH: USES OF SPACE  
CLOTHING FOR ASTRONAUTS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM06

AD-622 047

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA

TEST AND EVALUATION OF U. S. AIR FORCE EXPERIMENTAL  
CUTAWAY TYPE ANTI-BLACKOUT SUITS DESIGNATED MA-1. (U)

DESCRIPTIVE NOTE: SPECIAL REPT.,

APR 59 14P

ZARRIELLO, J. J. INORSWORTHY,

MARY E. I

REPT. NO. NSAM-SR-59-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*BLACKOUT(PHYSIOLOGY), PRESSURE SUITS),  
(\*PRESSURE SUITS, TESTS), PROTECTIVE CLOTHING,  
ACCELERATION TOLERANCE, PILOTS, NAVAL PERSONNEL,  
AVIATION MEDICINE, TABLES(DATA) (U)

THE PURPOSE OF THIS STUDY WAS TO TEST AND EVALUATE  
THE U. S. AIR FORCE EXPERIMENTAL CUTAWAY TYPE  
ANTI-BLACKOUT SUIT DESIGNATED MA-1. THE MA-1  
ANTI-BLACKOUT SUIT WAS TESTED AND EVALUATED FOR ANTI-  
BLACKOUT PROTECTION AT VARIOUS POSITIVE G LEVELS TO  
THE POINTS OF GREYOUT AND BLACKOUT. THE RESULTS OF  
THE ANTI-BLACKOUT PROTECTION AFFORDED BY THE ANTI-  
BLACKOUT SUIT HAS BEEN PRESENTED IN TABLE FORM.  
THE SUIT IS COMFORTABLE, PROVIDES ADEQUATE ANTI-  
BLACKOUT PROTECTION, AND WOULD PROBABLY BE WELL  
ACCEPTED BY FLEET PILOTS. NO MAJOR DIFFERENCES  
WERE NOTED BETWEEN THE PROTECTION AFFORDED BY THE  
MA-1 ANTI-BLACKOUT SUIT BETWEEN EXPERIENCED AND  
INEXPERIENCED SUBJECTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-622 197

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA

SOUND ATTENUATION CHARACTERISTICS OF THE PROJECT  
MERCURY PRE-PRODUCTION FULL PRESSURE SUIT HELMET. (U)

DESCRIPTIVE NOTE: SPECIAL REPT.,

SEP 60 15P CAMP, ROBERT T. JR.; TOLHURST;

GILBERT C. GREENE, JAMES W. I

REPT. NO. SR-60-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*HELMETS, PRESSURE SUITS), (\*EAR, SAFETY  
DEVICES), (\*SAFETY DEVICES, EAR), SOUND, NOISE,  
ATTENUATION, ACOUSTIC EQUIPMENT,  
PERFORMANCE(ENGINEERING), TESTS, TEST METHODS,  
THRESHOLDS(PHYSIOLOGY), ASTRONAUTS (U)

TO DETERMINE THE SOUND ATTENUATION CHARACTERISTICS  
OF THE PROJECT MERCURY PREPRODUCTION FULL  
PRESSURE SUIT HELMET USING TWO DIFFERENT METHODS:  
(1) PSYCHOPHYSICAL: THE DIFFERENCES BETWEEN A  
TRAINED LISTENER'S AUDITORY THRESHOLDS FOR VARIOUS  
TEST TONES WITHOUT HELMET AND THE THRESHOLDS OBTAINED  
WHILE WEARING THE HELMET DEFINED THE RELATIVE  
ATTENUATION VALUES AT LOW SOUND PRESSURE VALUES.  
(2) PHYSICAL: DIFFERENCES BETWEEN SOUND  
PRESSURES MEASURED OUTSIDE THE SUIT AND THOSE  
MEASURED UNDER THE RIGHT EARPHONE CUSHION BY A PROBE  
MICROPHONE WERE TAKEN AS ATTENUATION VALUES UNDER  
HIGH SOUND PRESSURE LEVEL (SPL) CONDITIONS.  
MEASUREMENTS MADE UNDER LOW SPL CONDITIONS SHOW  
THAT THE 'REAL-EAR' ATTENUATION VALUES OBTAINED WITH  
TEST TONES 250 CPS, 500 CPS, 4000 CPS, 6000 CPS, AND  
8000 CPS EXCEEDED PRE-ESTABLISHED SPECIFICATIONS.  
ATTENUATION VALUES OBTAINED WITH TEST TONES 125  
CPS, 1000 CPS, 2000 CPS, 3000 CPS, AND A WIDE BAND OF  
NOISE (20 TO 10,000 CPS) DID NOT MEET  
SPECIFICATIONS. THE ATTENUATION MEASURED BY  
PHYSICAL METHODS USING AS REFERENCE FREQUENCIES 125  
CPS, 500 CPS, 1000 CPS, 2000 CPS, 3000 CPS, 4000 CPS,  
6000 CPS, AND 8000 CPS EACH PRESENTED AT 120 DB SOUND  
PRESSURE LEVELS DID NOT MEET SPECIFICATIONS.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-624 886 6/11 14/2  
LITTLE (ARTHUR D) INC CAMBRIDGE MASS

STUDY AND DEVELOPMENT OF MATERIALS AND TECHNIQUES FOR  
PASSIVE THERMAL CONTROL OF FLEXIBLE EXTRAVEHICULAR  
SPACE GARMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 64-JUN 65.  
SEP 65 84P RICHARDSON, DAVID L. I  
CONTRACT: AF33(615)-1904  
PROJ: AF-6373  
TASK: 637302  
MONITOR: AMRL TR-65-156

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*TEMPERATURE CONTROL, PROTECTIVE),  
(\*PROTECTIVE CLOTHING, SPACE ENVIRONMENT), THERMAL  
CONDUCTIVITY, THERMAL INSULATION, HELIUM, HEATING (U)

THE PROGRAM ENCOMPASSED AN ANALYTICAL AND  
EXPERIMENTAL INVESTIGATION OF THE APPLICATION OF  
PASSIVE THERMAL CONTROL TECHNIQUES TO EXTRAVEHICULAR  
FLEXIBLE SPACE GARMENTS IN 300 NAUTICAL MILE EARTH  
ORBITS. RESULTS INDICATE THAT PASSIVE THERMAL  
CONTROL BY VARYING THE ABSORPTANCE AND EMITTANCE OF  
THE OUTER SURFACE OF THE GARMENT IS NOT POSSIBLE WHEN  
INTERNAL HEAT GENERATED IS IN EXCESS OF 1500 BTU/  
HR. FOR ALL CONDITIONS, THE SUIT'S SOLAR  
ABSORPTANCE SHOULD BE AS SMALL AS POSSIBLE AND ITS  
EMITTANCE AS LARGE AS POSSIBLE. BY CONTROLLING THE  
CONDUCTANCE OF THE SPACE SUIT WALL, INTERNAL HEATING  
RATES TO 2000 BTU/HR ARE ACHIEVABLE WHEN THE SPACE  
SUIT HAS AN ABSORPTANCE OF 0.17 AND AN EMITTANCE OF  
0.85. A SOLAR PARASOL WITH SELECTED RADIATING  
PROPERTIES ON EACH SIDE ALLOWS FOR HIGHER INTERNAL  
HEATING RATES. EXPERIMENTS WERE MADE IN A  
SIMULATED NOON ORBIT WITH A CYLINDRICAL SECTION OF A  
SPACE SUIT WHICH WAS FIRST TESTED WITH AN EVACUATED  
INSULATION AND THEN WITH A HELIUM-FILLABLE  
INSULATION. THE RANGE OF AVERAGE CONDUCTANCE FOR  
THESE INSULATIONS WAS 0.3 TO 4.0 BTU/SQ FT HR F.  
A RANGE OF INTERNAL HEAT GENERATION FROM 600 TO 2100  
BTU/HR WAS ACHIEVED WHEN THE EVACUATED INSULATION  
WAS FILLED WITH HELIUM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-626 619 6/11 6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

BIOCHEMICAL AND PHYSIOLOGICAL EVALUATION OF HUMAN  
SUBJECTS WEARING PRESSURE SUITS UNDER SIMULATED  
AEROSPACE CONDITIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.:  
OCT 65 50P SMITH, K. J. ; SPECKMANN, E. W.  
; GEORGE, MARILYN E. ; HOMER, G. M. ; DUNCO, D.  
WILTSIE I  
REPT. NO. AMRL-TR-65-147  
PROJ: AF-7164  
TASK: 716405

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*DIET, AEROSPACE MEDICINE), (\*PRESSURE  
SUITS, AEROSPACE MEDICINE), ASTRONAUTS, AVIATION  
PERSONNEL, AVIATION, NUTRITION, PHYSIOLOGY, BLOOD  
PRESSURE, BODY, PULSE RATE, HEMATOLOGY, BLOOD CHEMISTRY,  
METABOLISM, EXERCISE (PHYSIOLOGY), CONFINED ENVIRONMENTS,  
LIFE (U)

A SERIES OF EXPERIMENTS HAS BEEN DESIGNED TO  
DETERMINE THE WATER, ENERGY, AND PROTEIN REQUIREMENTS  
OF MAN UNDER VARIOUS SIMULATED AEROSPACE CONDITIONS.  
THE EXPERIMENT DESCRIBED MEASURED THE EFFECTS OF  
WEARING A MA-10 PRESSURE SUIT CONTINUOUSLY FOR 14  
DAYS ON THE AFOREMENTIONED MEASUREMENTS. A FRESHLY  
PREPARED DIET THAT CLOSELY MATCHED PROPOSED AEROSPACE  
DIETS WAS FED TO FOUR HUMAN VOLUNTEERS AND  
COEFFICIENTS OF APPARENT DIGESTIBILITY AND BALANCES  
OF THE COMPONENT NUTRIENTS WERE DETERMINED. THE  
RESULTS SHOWED THAT THE WEARING OF UNPRESSURIZED  
MA-10 SUITS UNDER AMBIENT CONDITIONS FOR 14 DAYS  
DID NOT AFFECT THE SUBJECTS' FLUID INTAKE AND OUTPUT.  
NO SIGNIFICANT CHANGES WERE OBSERVED IN  
DIGESTIBILITIES OR BALANCES OF THE NUTRIENT  
COMPONENTS. RESULTS INDICATED THAT THE FRESH FOOD  
DIETS WAS VERY EFFICIENTLY UTILIZED. NO  
SIGNIFICANT CHANGES IN SUBJECT BLOOD PRESSURES, ORAL  
TEMPERATURES OR PULSE RATES WERE OBSERVED DURING THE  
EXPERIMENT. ALL HEMATOLOGICAL AND CHEMICAL  
ANALYSES OF BLOOD WERE WITHIN THE NORMAL RANGE AND  
DID NOT EXHIBIT DIFFERENCES BETWEEN EXPERIMENTAL  
PERIODS. THE 2 DAY MENU OF FRESH FOODS PROVED TO  
BE VERY ACCEPTABLE AND DID NOT DECREASE IN  
ACCEPTABILITY DURING THE 42 DAY EXPERIMENT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-676 979 6/19 6/17 22/1 3/2  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

MOBILITY OF PRESSURE-SUITED SUBJECTS UNDER WEIGHTLESS  
AND LUNAR GRAVITY CONDITIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT.: JUN 61-JUN 62:  
AUG 65 96P SIMONS, JOHN C. WALK:  
DIETER E. SEARS, CHARLES W. I  
REPT. NO. AMRL-TR-65-65  
PROJ: AF-7184  
TASK: 718405 .718408

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WEIGHTLESSNESS, HUMAN FACTORS  
ENGINEERING), (\*LUNAR ENVIRONMENT, PERFORMANCE(HUMAN)),  
(\*PRESSURE SUITS, MOBILITY), SIMULATION, MOTION,  
MANEUVERABILITY, GRAVITY, SPACE FLIGHT, HUMAN BODY,  
POSTURE(PHYSIOLOGY), TIME, ASTRONAUTS, HATCHES, ANALYSIS  
OF VARIANCE, ANTHROPOMETRY, GRAPHICS, TABLES(DATA) (U)

PROBLEMS OF MOVING THROUGH HATCHWAYS UNDER ZERO AND  
LUNAR GRAVITY CONDITIONS, AND RELATED DESIGN PROBLEMS  
OF HATCH SIZE AND SHAPE, WERE INVESTIGATED IN FLIGHT.  
SUBJECTS WERE TIMED AND PHOTOGRAPHED AS THEY  
ACCOMPLISHED VARIOUS MOTIONS DURING WEIGHTLESS AND  
LUNAR-GRAVITY MANEUVERS OF A LARGE CABIN AIRCRAFT.  
PERFORMANCE DATA ARE PRESENTED FOR VARIOUS  
COMBINATIONS OF CLOTHING, GRAVITY AND BODY-POSITION  
CONDITIONS. TIME AND CONTACT DATA ARE PRESENTED  
FOR THE EGRESS MOTION AS IT IS INFLUENCED BY CHANGES  
IN THE EXIT AREA. ORIENTATION PROBLEMS AND  
MANEUVERING TECHNIQUES, AS INFLUENCED BY AREA AND  
VOLUME RESTRICTIONS, ARE DISCUSSED. MOTIONS OF  
PRESSURE-SUITED SUBJECTS GENERALLY REQUIRED 30%  
MORE TIME THAN CORRESPONDING MOTIONS OF UNSUITED  
SUBJECTS. MOST MOTIONS REQUIRED 35% MORE TIME  
DURING ZERO G THAN DURING LUNAR G. NO  
SIGNIFICANT DIFFERENCES IN EGRESS TIMES WERE FOUND  
AMONG FOUR BODY-POSITIONS. COMPARED WITH 1 INCH OF  
EXIT CLEARANCE, 5 INCHES OF CLEARANCE IMPROVED EGRESS  
TIME BY APPROXIMATELY 6%. ACCURACY, RATHER THAN  
TIME OF MOTION, APPEARED TO BE A MORE SENSITIVE  
MEASURE OF OPERATOR PERFORMANCE FOR THE EGRESS TASK.  
A 95TH PERCENTILE SHOULDER PLANE WITH A 19.4-INCH  
MAJOR AXIS IS PROPOSED AS A BASIC EGRESS REFERENCE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-627 190 6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

EFFICACY OF PRESSURE SUIT COOLING SYSTEMS IN HOT  
ENVIRONMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUL-DEC 64,  
OCT 65 9P VEGHTE, JAMES H. ;  
REPT. NO. AMRL-TR-65-58  
PROJ: AF-7164  
TASK: 716409

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V36  
N10 P945-7 OCT 1965. COPIES TO DDC USERS ONLY.

DESCRIPTORS: (•PRESSURE SUITS, COOLING), HEAT TOLERANCE,  
THERMAL STRESSES, VENTILATION, WATER, AIR, COOLING +,  
EVAPORATION, ENVIRONMENT (U)

THREE DIFFERENT AIR DISTRIBUTING SYSTEMS AND ONE  
WATER-COOLED SYSTEM WERE EVALUATED FOR EFFICACY IN  
COOLING A PERSON IN A FULL PRESSURE SUIT. FIVE  
SUBJECTS PARTICIPATED IN EXPERIMENTS AT ATMOSPHERIC  
PRESSURE IN A 43C ENVIRONMENT. THE PRESSURE SUIT  
WAS WORN UNPRESSURIZED AND PRESSURIZED AT 192 MM  
HG. THE RESULTS SHOW THE SEPARATE TUBULAR AIR  
VENTILATING GARMENT TO BE EQUAL TO OR SUPERIOR IN  
EVAPORATIVE COOLING EFFICIENCY TO EITHER AN EXTREMITY  
DISTRIBUTING SYSTEM WHICH IS AN INTEGRAL PART OF THE  
CURRENT OPERATIONAL FULL PRESSURE SUIT, OR TO THE  
STANDARD AIR FORCE VENTILATING GARMENT. THE  
WATER-COOLED SYSTEM WAS SUPERIOR TO ALL AIR  
DISTRIBUTION SYSTEMS AND THE SUBJECTS WERE  
COMFORTABLE FOR THE ENTIRE TWO-HOUR TEST PERIOD.  
IN CONTROL EXPERIMENTS WITH NO VENTILATION,  
TOLERANCE LIMITS WERE REACHED BEFORE THE END OF TWO  
HOURS. ON THE BASIS OF THESE DATA, SERIOUS  
CONSIDERATION OF WATER-COOLED SUIT SYSTEMS FOR  
MAINTAINING A PERSON IN THERMAL COMFORT UNDER  
CONDITIONS OF THERMAL STRESS SHOULD BE CONTINUED.  
(AUTHOR) (U)

UNCLASSIFIED

CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-628 367 6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

EFFECTS OF VARIOUS GASES ON HANDGEAR INSULATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 64-MAR 65,  
DEC 65 18P HALL, JOHN F. JR.;  
BUEHRING, WILLI J. ; STROBL, WOLFGANG W. ;  
REPT. NO. AMRL-TR-65-4,  
PROJ: AF-7164,  
TASK: 716409,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PROTECTIVE CLOTHING, GLOVES), (•GLOVES,  
THERMAL INSULATION), GASES, CARBON DIOXIDE,  
FLUOROHYDROCARBONS, HELIUM, EFFECTIVENESS, THERMAL  
CONDUCTIVITY, TESTS, TEST METHODS (U)

THE EFFECT OF GASES HAVING DIFFERENT THERMAL  
CONDUCTIVITIES ON THE THERMAL INSULATION OF HANDGEAR  
WAS INVESTIGATED. EXPERIMENTAL MITTENS WITH  
SPECIAL PLASTIC SPACER INTERLINERS OF VARIOUS  
THICKNESSES WERE SEALED BETWEEN GAS IMPERMEABLE OUTER  
AND INNER SHEETS AND FILLED FIRST WITH ROOM AIR (AS  
CONTROL), THEN VARIOUS EXPERIMENTAL GASES, AND  
THERMAL INSULATION MEASURED ON A COPPER HAND.  
EXPERIMENTAL GASES INCLUDED CARBON DIOXIDE,  
FREON-12, AND HELIUM. COMPARATIVE RESULTS ARE  
PRESENTED IN TERMS OF PERCENTAGE INSULATION CHANGE;  
CLO PER INCH; CONDUCTIVITY (K) VALUES; AND THE  
MEASURED THERMAL INSULATION (CLO) VALUES.  
BEFORE ALL TESTS EACH MITTEN WAS EVACUATED (13 CM  
HG) TO REMOVE ALL ENTRAPPED AIR, THEN FILLED  
WITHOUT CONTAMINATION WITH THE CONTROL, OR  
EXPERIMENTAL GAS. GAS WITHIN THE HANDGEAR WAS  
MAINTAINED AT A CONSTANT POSITIVE PRESSURE (7.6 MM  
WATER) THROUGHOUT EACH EXPERIMENT. MEAN  
MEASUREMENTS SHOWED SIGNIFICANT INCREASES (13-  
32%) OF THERMAL INSULATION FOR FREON-12 AND  
CARBON DIOXIDE, WITH DECREASED INSULATION OBSERVED  
WITH HELIUM. SIGNIFICANCE AND SOME PRACTICAL  
APPLICATION OF THESE RESULTS FOR PROTECTIVE CLOTHING  
DESIGN ARE SHOWN. (U)

UNCLASSIFIED

DNC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-631 295 11/5 15/5  
LITTON SYSTEMS INC ST PAUL MINN APPLIED SCIENCE DIV

THERMAL-PHYSICAL PARAMETERS OF MATERIALS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 21, MAY 62-20 MAY 65,  
JAN 66 240P LARSON, R. E. IKYDD, A. R. 1  
CONTRACT: DA-19-129-QM-1998,  
PROJ: DA-1-K-024401-A-113  
MONITOR: USA-NLABS, C/OM TR-66-3-CM, 16

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PROTECTIVE CLOTHING, THERMAL),  
(\*TEXTILES, \*THERMAL INSULATION), THERMAL, PHYSICAL  
PROPERTIES, HEAT TRANSFER, DEGRADATION, INTERFEROMETERS,  
SURFACE TEMPERATURE, HEAT TRANSFER COEFFICIENTS (U)

RESEARCH WAS PERFORMED ON THE THERMAL-PHYSICAL  
PARAMETERS OF MATERIALS NECESSARY FOR PROTECTION  
AGAINST INTENSE THERMAL RADIATION. IN THE  
THEORETICAL STUDIES, A SIMPLIFIED MODEL OF THE  
FABRIC-SKIN SYSTEM WAS CHOSEN AND THE HEAT FLOW  
EQUATIONS WERE SOLVED USING AN EXPLICIT FINITE  
DIFFERENCE CALCULATION PROCEDURE PROGRAMMED FOR  
SOLUTION ON A CONTROL DATA G-150 DIGITAL  
COMPUTER. SEVERAL SAMPLE CALCULATIONS WERE  
COMPARED WITH RESULTS EXISTING IN THE LITERATURE AND  
A LIMITED PARAMETER STUDY WAS PERFORMED WITH  
VARIATION OF THE FABRIC SURFACE HEAT TRANSFER  
COEFFICIENTS. FABRIC TEST SAMPLES WERE IRRADIATED  
IN AN ARC IMAGE FURNACE TEST FACILITY AND THE HEATING  
AND DEGRADATION PROCESSES WERE QUALITATIVELY AND  
QUANTITATIVELY STUDIED WITH A MACH-ZEHNDER  
INTERFEROMETER. THIS INSTRUMENT PROVIDED FABRIC  
SURFACE TEMPERATURE DATA, HEAT TRANSFER COEFFICIENT  
INFORMATION, AND A BETTER INSIGHT INTO THE CHEMICAL  
PROCESSES TAKING PLACE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-633 952 6/17  
SYSTEMS ENGINEERING GROUP RESEARCH AND TECHNOLOGY DIV  
WRIGHT-PATTERSON AFB OHIO

EVALUATION OF IMPROVED EXHALATION VALVE FOR HGU-8/P  
FLYING HELMET. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 63-DEC 65,  
APR 66 33P GOOD, DONALD R. ;  
REPT. NO. SEG-TR-66-7,  
PROJ: AF-913A-0000-97144.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•HELMETS, FLIGHT CLOTHING), (•EXHAUST  
VALVES, HELMETS), PRESSURE SUITS,  
PERFORMANCE(ENGINEERING), DESIGN, RESPIRATION (U)  
IDENTIFIERS: EVALUATION (U)

THE REPORT RECORDS THE RESULTS OF A COMPONENT  
IMPROVEMENT PROGRAM ON AN EXHALATION VALVE FOR THE  
HGU-8/P PARTIAL PRESSURE SUIT HELMET. THE  
PROGRAM WAS INTENDED PRIMARILY TO ELIMINATE THE  
TENDENCY FOR SUDDEN PRESSURE LOSS WITHIN THE HELMET  
CAUSED BY IMPROPER AND ERRATIC CLOSING  
CHARACTERISTICS OF THE EXHALATION VALVE AND TO MEET  
ADDITIONAL DESIGN OBJECTIVES OF GREATER OPENING  
SENSITIVITY, LOWER PRESSURE DROPS DURING FLOW  
CONDITIONS, AND AN OVERALL INCREASE IN RELIABILITY.  
THE VALVE AND ITS FUNCTION ARE DESCRIBED.  
INTERNAL FRICTION OF MOVING PARTS WAS REDUCED.  
THE OPENING OR 'CRACKING' PRESSURE WAS REDUCED AND  
THE DIFFERENTIAL PRESSURE UNDER FLOW CONDITIONS WAS  
IMPROVED SIGNIFICANTLY. TEST PROCEDURES AND  
RESULTS OBTAINED DURING LOW TEMPERATURE TESTS AND  
ROOM TEMPERATURE TESTS AT HIGH ALTITUDE ARE  
PRESENTED. IT IS CONCLUDED THAT THE IMPROVED  
DESIGN MEETS THE INITIAL OBJECTIVES OF THE PROGRAM.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-635 052 6/17 6/19  
NAVAL MEDICAL RESEARCH INST BETHESDA MD

CURRENT CONCEPTS AND PRACTICES APPLICABLE TO THE  
CONTROL OF BODY HEAT LOSS IN AIRCREW SUBJECTED TO  
WATER IMMERSION.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
66 12P BECKMAN, E. L. ;REEVES, E. I  
GOLDMAN, R. F. ;  
MONITOR: NAVMED MR005.13-4001.04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*BODY TEMPERATURE),  
FLIGHT CREWS, EXPOSURE(PHYSIOLOGY), SURVIVAL(PERSONNEL),  
SEA RESCUES, HEAT PRODUCTION(BIOLOGY), PHYSIOLOGY, HEAT  
TRANSFER, THERMAL INSULATION, THERMAL CONDUCTIVITY,  
HYPOTHERMIA, METABOLISM, ENERGY CONVERSION,  
THERMOCHEMISTRY, TOLERANCES(PHYSIOLOGY), WATER, OCEANS,  
TEMPERATURE, COSTS (U)  
IDENTIFIERS: IMMERSION, WATER (U)

THE PROBLEM OF PROVIDING ADEQUATE CLOTHING FOR  
PERSONNEL WHO EITHER ACCIDENTALLY OR OTHERWISE ARE  
IMMERSED IN COLD WATER HAS CONTINUED TO CHALLENGE  
CLOTHING MANUFACTURERS FOR THE PAST DECADE. THE  
DEVELOPMENT OF FOAMED PLASTICS AND OTHER CLOTHING  
MATERIALS OFFERS NEW POSSIBILITIES. LIKEWISE NEW  
ADVANCES IN ENERGY CONVERSION SYSTEMS OFFER NEW  
SOLUTIONS TO THIS CRITICAL OPERATIONAL PROBLEM.  
THE BASIC PHYSICAL AND PHYSIOLOGICAL CONCEPTS WHICH  
PERTAIN TO THE PROBLEM OF LIMITING THERMAL LOSS FROM  
THE IMMERSSED HUMAN ARE REVIEWED. THE NEWER  
TECHNICAL DEVELOPMENTS IN INSULATIVE CLOTHING AND  
SUPPLEMENTAL HEATING SYSTEMS ARE REVIEWED. THE  
NEWER TECHNICAL DEVELOPMENTS IN INSULATIVE CLOTHING  
AND SUPPLEMENTAL HEATING SYSTEMS ARE REVIEWED AND  
DISCUSSED WITH RELATION TO THESE BASIC CONCEPTS.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-635 206 6/17 6/11 22/1  
HAMILTON STANDARD DIV UNITED AIRCRAFT CORP WINDSOR LOCKS  
CONN

A STUDY OF TECHNIQUES AND EQUIPMENT FOR THE  
EVALUATION OF EXTRAVEHICULAR PROTECTIVE GARMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT., AUG 64-JUN 65.  
FEB 66 427P PARRY, DAVID G. CURRY,  
LEROY R. , JR. HANSON, DONALD B. TOWLE,  
GEORGE B. ;

REPT. NO. HSER-3671,  
CONTRACT: AF 33(615)-1780,  
PROJ: AF-6301,  
TASK: 630104,  
MONITOR: AMRL TR-66-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ASTRONAUTS, \*PRESSURE SUITS),  
(\*PROTECTIVE CLOTHING, ASTRONAUTS), CLOSE ECOLOGICAL  
SYSTEMS, LIFE SUPPORT, SPACE ENVIRONMENTS,  
PERFORMANCE(HUMAN), MODELS(STIMULATIONS), ANTHROPOMETRY,  
THERMAL CONDUCTIVITY, HEAT TRANSFER, LOADS(FORCES),  
JOINTS(PHYSIOLOGY), METABOLISM, MOBILITY, TORQUE,  
GLOVES, HELMETS, RADIATION HAZARDS, DATA PROCESSING,  
TELEMETER SYSTEMS, TEST METHODS, PARTIAL DIFFERENTIAL  
EQUATIONS, MATRICES(MATHEMATICS), GONIOMETERS, SPACE  
SIMULATION CHAMBERS, BODY TEMPERATURE, OXYGEN  
CONSUMPTION (U)

THE PURPOSE OF THIS STUDY WAS TO ESTABLISH A TEST  
METHODOLOGY AND A TEST SYSTEM FOR OBJECTIVE,  
QUANTITATIVE, AND ACCURATE EVALUATION OF  
EXTRAVEHICULAR SPACE PROTECTIVE GARMENTS. AREAS OF  
TESTING STUDIED INCLUDE FUNCTIONAL PERFORMANCE, LIFE  
SUPPORT, AND ENVIRONMENTAL PROTECTION. EMPHASIS IS  
PLACED ON THE PROBLEM OF SUIT TORQUE RESTRAINTS, I.  
E., MOBILITY. CONCEPTS FOR APPROPRIATE EVALUATION  
CRITERIA ARE DISCUSSED. THE INFORMATION PRESENTED  
AND CONCLUSIONS REACHED ARE THE RESULTS OF EXPERIENCE  
IN SUIT TESTING, TECHNICAL ANALYSIS, SEARCH OF THE  
LITERATURE, AND DISCUSSIONS WITH EXPERTS. THE  
NATURE AND CAUSES OF SUIT TORQUE RESTRAINT ARE  
DISCUSSED AND A PIN JOINTED MODEL IS DEVELOPED FOR  
PRECISE DESCRIPTION OF SUIT TORQUES AND BODY  
INTERLINK ANGLES. VARIOUS TECHNIQUES FOR TORQUE  
VECTOR AND BODY ANGLE MEASUREMENTS ARE EXPLORED AND  
IT IS CONCLUDED THAT A POWERED ARTICULATED DUMMU AND  
AN INTRASUIT EXOSKELETAL ELECTROGONIOMETER WITH OFF-(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-636 044 6/11  
BIOTECHNOLOGY INC ARLINGTON VA

EFFECTIVE LIFE SUPPORT HELMETS.

(U)

63 146P PARKER, JAMES F. , JR. :  
DILLON, RICHARD F. :  
REPT. NO. 64-3,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SPONSORED IN PART BY ONR.  
PROCEEDINGS OF AN INVITED SYMPOSIUM, WASHINGTON, D.  
C., 31 OCT-1 NOV 63.

DESCRIPTORS: (•PRESSURE SUITS, HELMETS), (•HELMETS,  
•LIFE SUPPORT), EFFECTIVENESS, SYMPOSIA, DESIGN, TEST  
EQUIPMENT, OXYGEN, SAFETY

(U)

CONTENTS: PHILOSOPHY OF CURRENT PROTECTIVE  
HELMET; DEFECTS OF CURRENT NAVY HELMETS;  
ACCIDENT DATA RELATED TO APH-5 PERFORMANCE;  
IMPROVED ACCIDENT REPORTING PROCEDURES RELATED TO  
HELMET PERFORMANCE; COOLING AND VENTILATION  
REQUIREMENTS FOR LIFE SUPPORT HELMETS;  
COMMUNICATIONS REQUIREMENTS FOR LIFE SUPPORT  
HELMETS; LENS AND VISOR SYSTEMS INFLUENCING HELMET  
DESIGN; OXYGEN REQUIREMENTS IN FUTURE HELMET  
DESIGN; DYNAMIC TESTING OF PROTECTIVE HELMETS;  
DESIGN CRITERIA AND PARAMETERS OF LIFE SUPPORT  
HELMETS; NAVY PHILOSOPHICAL CONSIDERATIONS IN  
FUTURE HELMET DESIGN; SUMMARY OF RECOMMENDED  
SPECIFICATIONS FOR IMPROVED LIFE SUPPORT HELMET.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-636 398 6/17  
ARMY NATICK LABS MASS MECHANICAL ENGINEERING DIV

INVESTIGATION OF THE PERFORMANCE OF AN OPEN-FLAME  
CONVECTOR. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

JUN 66 36P LEVIN, ALEXANDER ;  
PROJ: 7X89-20-003,  
MONITOR: USA-NLABS TR-66-50-ME

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•HEATERS, •PROTECTIVE CLOTHING),  
PERFORMANCE(ENGINEERING), BODY TEMPERATURE, HEAT  
TRANSFER, FLAMES, IGNITION, FUEL CONSUMPTION, SAFETY (U)

THE CONVECTOR INVESTIGATED WAS AN EXPERIMENTAL  
PROTOTYPE DESIGNED AS A BODY WARMER TO HEAT THE SPACE  
BETWEEN THE WEARER'S BODY AND HIS OUTER APPAREL.  
THREE PROTOTYPES WERE INVESTIGATED UNDER A SERIES  
OF CONDITIONS INCLUDING STANDARD, LOW-TEMPERATURE,  
AND OPERATIONAL. UNDER THESE CONDITIONS, DATA ON  
IGNITION, FUEL REGULATION, FUEL CONSUMPTION,  
CONVECTOR THERMAL CAPACITANCE, AND SAFETY WERE  
OBTAINED. RESULTS OF THE INVESTIGATION SHOWED THAT  
OPERATION OF THE PROTOTYPE CONVECTORS CAN BE  
REGULATED FOR CONSISTENT OPERATION WITHIN 9 PERCENT.  
IF THE FUEL RATE IS MONITORED AND CONTROLLED, THE  
CONVECTOR THERMAL CAPACITANCE MAY BE REGULATED WITHIN  
5 PERCENT TO ASSURE THE CONSTANCY OF THIS VARIABLE  
WHEN APPLIED TO HUMAN TEST SUBJECTS. ALTHOUGH THERE  
IS A POTENTIAL HAZARD OF FIRE, HEAT INJURY AND  
TOXICITY FROM USE OF THE OPEN-FLAME CONVECTOR AS A  
BODY WARMER, ITS PERFORMANCE WITHIN SAFETY THRESHOLD  
LIMITS IS OBTAINABLE. THE FIRE AND HEAT INJURY  
HAZARDS ARE MINIMIZED WHEN THE FUEL REGULATING VALVE  
IS PREWARMED AT LOW TEMPERATURES AND THE BURNER IS  
IGNITED IN A SHIELDED ENCLOSURE. CARBON MONOXIDE  
CONCENTRATION WAS REDUCED TO ACCEPTABLE THRESHOLD  
LIMITS, LESS THAN 0.01 PERCENT, WHEN THE CONVECTORS  
WERE OPERATED AT LOW-TEMPERATURE OPERATIONAL  
CONDITIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-636 423 6/17  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT

DEVELOPMENT OF REVISED SIMPLEX FABRIC FOR SUMMER  
FLYING GLOVES. (U)

JUL 66 10P BROCKMANN, HAL E. I  
REPT. NO. NADC-MR-6607,  
TASK: RAE-20J-010-2021-FO12-10-02,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•FLIGHT CLOTHING, •GLOVES), FIRE RESISTANT  
TEXTILES, FIBERS, LEATHER, MANUFACTURING, STANDARDS (U)

AN IMPROVED SIMPLEX KNITTED FABRIC WAS DEVELOPED FOR USE IN SUMMER FLYING GLOVES WHICH WOULD EFFECT BETTER PROTECTION IN THE EVENT OF EXPOSURE TO FLAMES AND REDUCE OR ELIMINATE THE DIFFICULTIES ENCOUNTERED WITH THE FILAMENT SIMPLEX FABRIC. THE FABRIC WAS TO CONFORM TO ALL THE REQUIREMENTS NEEDED FOR COMFORT, SERVICEABILITY AND PROTECTION. ALL MANUFACTURING TECHNIQUES UTILIZED IN THIS EFFORT WERE TO CONFORM TO AND BE COMPATIBLE WITH STANDARD COMMERCIAL METHODS FOR REPRODUCING THE FINISHED PRODUCT. THE PRIMARY DIFFICULTIES ENCOUNTERED IN THE FLEET EVALUATION OF THE FILAMENT GLOVE WERE LIMITED TO SEAM SLIPPAGE AND GLOVE FIT. SINCE THE SEAM SLIPPAGE PRESENTS A PROBLEM IN SERVICEABILITY, IT IS PROPOSED THAT THE YARN STRUCTURE BE MODIFIED FROM A CONTINUOUS FILAMENT YARN TO A YARN SPUN FROM SHORT LENGTH STAPLE FIBERS. THIS IN ITSELF WOULD EFFECT A GREATER DEGREE OF SURFACE COHESIVENESS WITHIN THE FABRIC STRUCTURE AND THUS HELP TO HOLD THE SEAMS IN PLACE. AS FAR AS THE GLOVE FIT IN THE THUMB AREA WAS CONCERNED, A SIMPLE MODIFICATION OF THE PATTERN ACCOMPLISHED THE CHANGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-637 153 6/7 6/17  
NAVAL MEDICAL RESEARCH INST BETHESDA MD

AN EVALUATION OF THE FOAMED NEOPRENE 'DIVER'S WET  
SUIT' AS A SURVIVAL GARMENT FOR HELICOPTER AIRCREWS. (U)

DESCRIPTIVE NOTE: MEDICAL RESEARCH INTERIM REPT.  
JUL 66 35P REEVES, ELIZABETH I STEPHENS,  
MELVIN P. I BECKMAN, EDWARD L. I  
MONITOR: NAVMED MF-011.99-1001.7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIR SEA RESCUES, UNDERWATER CLOTHING),  
(\*SURVIVAL (PERSONNEL), \*UNDERWATER CLOTHING), (\*FLIGHT  
CREWS, SURVIVAL (PERSONNEL)), HELICOPTERS, ACCIDENTS,  
DITCHING, OCEANS, PROTECTIVE CLOTHING, SYNTHETIC RUBBER,  
HUMAN FACTORS ENGINEERING (U)

THE TYPE OF FLIGHTS PERFORMED BY HELICOPTERS  
REQUIRE PARTICULAR GARMENTS FOR THEIR AIRCREWS AS  
FOLLOWS: (1) WATER ENTRY BY AIRCREW IS BY WAY OF  
WATER COLLISION SO THAT THERE IS A HIGH PROBABILITY  
OF DAMAGE TO THE SURVIVAL GARMENT; (2) THE SHORT  
FLIGHT RADIUS OF THE HELICOPTER ENSURES THAT THE  
TIME-DISTANCE FROM A POTENTIAL RESCUE SHOULD BE  
RELATIVELY SHORT, SO THAT RESCUE SHOULD BE EXPECTED  
IN LESS THAN 4 HOURS; (3) THE SUIT MUST BE  
WEARABLE WITHOUT AN AIR VENTILATED SUIT FOR COOLING  
AND STILL BE USABLE IN HIGH COCKPIT TEMPERATURES UP  
TO 90F; AND, (4) THE LOW ALTITUDE OF FLIGHT  
ALLOWS NO TIME TO DON OR ZIPPER UP A SURVIVAL GARMENT  
SO THAT THERE SHOULD BE NO SIGNIFICANT PENALTY FOR  
ENTERING THE WATER WITH THE GARMENT PARTIALLY  
UNZIPPED. LABORATORY EXPERIMENTS USING A VARIETY  
OF ANTIEXPOSURE ASSEMBLIES DEMONSTRATED THAT THE 3/16  
INCH. FOAMED NEOPRENE WET SUIT, MITTENS, HOOD, AND  
INSULATED RUBBER 'THERMAL' BOOTS PROVIDED THE MOST  
COMFORTABLE AND EFFICIENT CONFIGURATION. TOLERANCE  
TIMES WERE ESTABLISHED FOR SUCH CLOTHING IN 40, 50,  
AND 60F. WATER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-638 092 6/17  
ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK  
MASS

'WET' VERSUS 'DRY' SUIT APPROACHES TO WATER IMMERSION  
PROTECTIVE CLOTHING. (U)

66 3P GOLDMAN, R. F. IBRECKENRIDGE, J.  
R. IREEVES, E. IBECKMAN, E. L. I

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V37  
N5 P485-7 MAY 1966.

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PROTECTIVE CLOTHING; THERMAL INSULATION);  
FLIGHT CLOTHING; FLIGHT CREWS; AIR; WATER; SYNTHETIC  
RUBBER; COMPRESSIVE PROPERTIES; TEMPERATURE (U)  
IDENTIFIERS: IMMERSION; WATER (U)

IMMERSION PROTECTION FLIGHT CLOTHING CAN BE OF  
EITHER A SKIN DIVER, 'WET' SUIT TYPE OR WATERPROOF,  
'DRY' SUIT. A WATERPROOFED COOPER MANIKIN WAS USED  
TO STUDY THE INSULATIVE PROPERTIES OF BOTH TYPES OF  
SUITS, IN AIR AND ALSO DURING WATER IMMERSION. THE  
BULKIER CHARACTERISTICS OF THE DRY SUIT STUDIED, THE  
MARK 5A, PROVIDED GREATER INSULATION IN AIR THAN  
EITHER A 1/4 INCH OR 3/16 INCH UNICELLAR SPONGE,  
NEOPRENE WET SUIT. HOWEVER, DURING WATER  
IMMERSION, COMPRESSION OF THE 'DRY' SUIT BY THE WATER  
REDUCED THE INSULATION BY 75 PER CENT. THE  
INSULATION OF THE 'WET' SUITS WAS ALSO REDUCED BUT  
THESE SUITS ARE LESS COMPRESSIBLE AND THUS DURING  
WATER IMMERSION PROVIDE SIGNIFICANTLY MORE INSULATION  
THAN THE 'DRY' SUIT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-638 560 6/17 11/5  
PRODESCO INC PERKASIE PA.

DESIGN OF WOVEN AND LAMINATED FABRICS FOR TESTING OF  
THERMAL RESISTANCE. (U)

DESCRIPTIVE NOTE: FINAL REPT.  
AUG 66 15P BROCKMANN, HAL E. ;  
CONTRACT: N62269-2231  
TASK: RAE-20J-010/2021/FO12-10-02,  
MONITOR: NADC-MR 6612

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*THERMAL INSULATION, \*TEXTILES), (\*FIRE  
PROTECTIVE CLOTHING, THERMAL INSULATION), FIRE RESISTANT  
TEXTILES, LAMINATES, MANUFACTURING, EXPERIMENTAL  
DESIGN (U)

IN AN EFFORT TO DEVELOP A SINGLE-LAYER FABRIC  
SPECIFICALLY CONSTRUCTED TO RESIST THERMAL RADIATION  
OF INTENSITY COMMENSURATE WITH THAT OF NUCLEAR  
DETONATIONS SEVERAL CONCEPTS WERE INVESTIGATED.  
THESE CONCEPTS WERE: (1) AIR SPACINGS  
INCORPORATED IN THE FABRIC BY WEAVING; (2)  
WEAVING INTO THE FABRIC A METALLIC SCRIM TO IMPEDE  
AND SPREAD Laterally THE HEAT PASSING THROUGH THE  
FABRIC; AND (3) INCORPORATING AN INSULATING LAYER  
BY LAMINATION BETWEEN TWO FABRIC LAYERS. FABRICS  
OF GOOD THERMAL RESISTANCE WERE OBTAINED AND CERTAIN  
PRINCIPLES WITH REGARD TO THERMAL PROTECTION WERE  
DERIVED FROM THE DATA GENERATED IN THIS STUDY  
TOGETHER WITH THOSE FROM EARLIER STUDIES ON FLAME  
CONTACT. FOREMOST AMONG THE LATTER IS THE FACT  
THAT AIR SPACING IS FAR MORE EFFICACIOUS AGAINST HEAT  
TRANSFER BY FLAME CONTACT THAN BY RADIATION.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOS

AD-641 247 15/5  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT

CAMOUFLAGE PRINTING OF NOMEX SUMMER FLYING  
COVERALLS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 66 11P CHIANTA, MARIA A. I  
REPT. NO. NADC-MR-6619.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (FLIGHT CLOTHING, CAMOUFLAGE), FIRE  
RESISTANT MATERIALS, PRINTING, COLORS, DYES,  
FLAMMABILITY  
IDENTIFIERS: NOMEX YARN

(U)

(U)

AN INVESTIGATION WAS CARRIED OUT TO DETERMINE THE  
EFFECTIVENESS OF NOMEX SUMMER FLYING COVERALLS  
PRINTED WITH A CAMOUFLAGE PATTERN AS COMPARED WITH  
THE STANDARD PLAIN OLIVE GREEN COVERALLS.  
LABORATORY TESTS INDICATED THAT CAMOUFLAGE PRINTING  
OF STAPLE NOMEX IN A RESIN-BONDED PIGMENT SYSTEM  
DOES NOT SIGNIFICANTLY ALTER THE FLAME-RESISTANT  
CHARACTERISTICS OF NOMEX. FIELD TESTS WITH  
MARINE UNITS SHOWED THAT THE CAMOUFLAGE SYSTEM  
CONSIDERED HERE OFFERED VERY LITTLE ADVANTAGE OVER  
THE ORDINARY OLIVE-GREEN NOMEX SUITS IN CONCEALMENT  
IN GREEN LEAFY AREAS AND NEITHER SUIT CONTRIBUTES TO  
CONCEALMENT IN PREDOMINANTLY BROWN SURROUNDINGS.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-642 178 6/17 1/3 15/5  
LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY  
DIV

SOVIET HIGH ALTITUDE EQUIPMENT FOR AIRCREW  
PROTECTION.

(U)

JUN 66 82P UMANSKII, S. P. IREBROV, M. F. I  
RABKIN, I. G. IBELSKII, B. L. ISOFRONOV, E. V. I  
REPT. NO. AYD-66-67  
MONITOR: TT 67-60028

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON SURVEYS OF FOREIGN  
SCIENTIFIC AND TECHNICAL LITERATURE. SPECIAL  
EXTENDED ABSTRACT AND TRANSLATIONS.

DESCRIPTORS: (\*AEROSPACE CRAFT, AVIATION SAFETY),  
(\*FLIGHT CLOTHING, HIGH ALTITUDE), FLIGHT CREWS,  
PRESSURE SUITS, HELMETS, PARACHUTES, EJECTION SEATS,  
JETTISONABLE EQUIPMENT, SPACECRAFT CABINS, ENVIRONMENT,  
OXYGEN MASKS, ACCELERATION, USSR (U)

THE REPORT CONSISTS OF ABSTRACTS OF THE FOLLOWING  
TOPICS: THE PILOT ENDURANCE BARRIER; PROTECTIVE  
EQUIPMENT FOR HIGH-ALTITUDE FLIGHTS; FUNCTIONS OF  
AUTOMATIC EQUIPMENT ON AIRCRAFT; FLIGHT SAFETY;  
CONSTRUCTION OF AIRCRAFT; AIRPLANES, ROCKETS,  
AND HELICOPTERS; AIRCRAFT EQUIPMENT. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-644 611 15/5 6/17  
ARMY LIMITED WAR LAB ABERDEEN PROVING GROUND MD

VENTILATED FLIGHT SUIT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 66 17P HARDENBROOK, FREDERIC G. ;  
REPT. NO. LWL-TR-66-07  
PROJ: 02-S-66

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, TROPICAL REGIONS),  
(\*AVIATION PERSONNEL, FLIGHT CLOTHING), VENTILATION,  
COOLING, EFFICIENCY, PROTECTIVE CLOTHING, ENVIRONMENT,  
AIR COOLED, LOGISTICS (U)

THE PURPOSE OF THIS DEVELOPMENT IS TO INCREASE THE  
EFFICIENCY OF THE PILOT AND CO-PILOT OF THE HOHAWK  
AIRCRAFT WHEN OPERATING IN HOT CLIMATES BY USING THE  
PRINCIPLE OF EVAPORATIVE COOLING. TO DO SO, A  
VENTILATED FLIGHT SUIT WAS DEVELOPED THROUGH  
WHICH AMBIENT AIR COULD BE FORCED BY USING A SMALL  
BLOWER AND FLEXIBLE TUBING CONDUCTING THE AMBIENT AIR  
TO THE SUIT USING THE PERSPIRATION OF THE INDIVIDUAL  
TO ACHIEVE THE COOLING. SERVICE TESTS MADE IN  
SOUTH VIETNAM PROVED THE VENTILATED FLIGHT  
SUIT INADEQUATE WHEN THE AIRCRAFT COOLING SYSTEM  
WAS NOT IN OPERATION UNLESS A SUPPLEMENTARY  
LIGHTWEIGHT, PORTABLE COOLING SYSTEM IS PROVIDED. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-644 917 6/17 13/1  
WESTINGHOUSE ELECTRIC CORP LIMA OHIO AEROSPACE ELECTRICAL  
DIV

DEVELOPMENT OF THERMOELECTRIC HEATING AND VENTILATING  
SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON PHASE 3. 29 JUN 63-18  
APR 65;  
APR 65 37P BERNARD, ANDREW M. FOX,  
LEONARD J. I  
REPT. NO. WAED-65.26E  
CONTRACT: DA-19-129-QM-1981  
PROJ: 7X80-01-001

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HEATERS, EXPOSURE SUITS), (\*EXPOSURE  
SUITS, \*COOLING + VENTILATING EQUIPMENT),  
THERMOELECTRICITY, BLOWERS, GENERATORS, PACKAGING,  
PORTABLE EQUIPMENT, PERFORMANCE(ENGINEERING) (U)  
IDENTIFIERS: THERMOELECTRIC POWER GENERATION (U)

THREE THERMOELECTRIC HEATING AND VENTILATING  
SYSTEMS FOR ENVIRONMENTAL CONTROL OF TROOPS WHEN  
EXPOSED TO EXTREME ENVIRONMENTS OR ENEMY IMPOSED  
HAZARDS WERE DELIVERED. MODIFICATIONS OF A BATTERY  
START, EASY FILL FUEL TANK AND A PACKAGE COVER WERE  
REQUESTED AFTER DELIVERY OF THE FIRST UNIT AND WERE  
THEN MADE TO ALL THREE UNITS. THE MODIFICATIONS  
INCREASED THE PACKAGE WEIGHT BUT WERE CONSIDERED  
NECESSARY FOR THE SUCCESS OF THE PROGRAM. IN  
GENERAL, THE UNITS PERFORMED WELL IN LABORATORY  
EVALUATION DELIVERING THE REQUIRED 18 CFM OF AIR AT 4  
IN. STATIC WATER PRESSURE OR 20 WATTS OF ELECTRICAL  
POWER TO AN EXTERNAL LOAD. ADDITIONAL AREAS OF  
IMPROVEMENT BECAME EVIDENT DURING THE FABRICATION AND  
LABORATORY EVALUATION OF THE THREE UNITS. THE  
WEIGHT OF THE UNIT COULD BE REDUCED TO A MAXIMUM OF  
ELEVEN POUNDS FROM THE PRESENT 15.7 LBS., INCLUDING  
ALL PRESENT SPECIFICATIONS AND MODIFICATIONS.  
(AUTHOR) (U)

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-646 062 6/17  
NAVAL RESEARCH LAB WASHINGTON D C

REACTIVITY OF VARIOUS DAMAGE CONTROL PROTECTIVE  
CLOTHING MATERIALS WITH CHLORINE TRIFLUORIDE. (U)

DESCRIPTIVE NOTE: MEMORANDUM REPT.,  
JUN 63 19P MORAN, H. E. BURNETT, J. C. I  
REPT. NO. NRL-MR-1434

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, MATERIALS), (\*DAMAGE  
CONTROL, PROTECTIVE CLOTHING), CHLORINE COMPOUNDS,  
FLUORIDES, SYNTHETIC RUBBER, IGNITION, HALOCARBON  
PLASTICS, OXIDIZERS, OXYGEN MASKS (U)

CHLORINE TRIFLUORIDE (CTF) HAS BEEN PROPOSED FOR  
USE IN AN IMPROVED MISSILE PROPELLANT SYSTEM.  
SINCE THIS IS A STRONGER OXIDIZER THAN ANY USED  
HERETOFORE, IT WAS DESIRABLE TO EXAMINE ITS EFFECT ON  
MATERIALS USED, OR PROPOSED FOR USE, IN MAKING  
PROTECTIVE CLOTHING AND OTHER GEAR FOR DAMAGE  
CONTROL. NEOPRENE AND ARMALON (WOVEN  
POLYTETRAFLUOROETHYLENE LAMINATED WITH A CONTINUOUS  
SHEET OF POLYTETRAFLUOROETHYLENEPROPYLENE) SHOWED  
PROMISE AS MATERIALS FOR THE CONSTRUCTION OF  
PROTECTIVE COVERALLS. IT WAS ALSO SHOWN THAT THESE  
MATERIALS MUST BE KEPT FREE OF LOCAL CONTAMINATION  
WITH SUBSTANCES EASILY IGNITED BY CTF, SUCH AS OIL  
AND GREASE, SINCE, ONCE IGNITED, THE UNCONTAMINATED  
PORTION MAY CONTINUE TO BURN, EVEN IN DILUTE CTF  
VAPOR. THE ARMALON SHOWED GREATER RESISTANCE TO  
CTF OVER A WIDER RANGE OF CONCENTRATION THAN THE  
NEOPRENE. BUTYL RUBBER COATED CLOTH AND VINYL  
COATED GLASS CLOTH WERE READILY IGNITED BY DILUTE  
CTF VAPOR, AND THEY APPEAR UNSUITABLE FOR  
PROTECTIVE CLOTHING. HYDRAZOID PROPELLANT FUELS  
WERE IGNITED BY CTF VAPOR IN CONCENTRATIONS AS LOW  
AS 1-1/2 PERCENT BY VOLUME. SAMPLES OF THE  
MATERIALS USED IN THE CONSTRUCTION OF THE NAVY OBA  
(OXYGEN BREATHING APPARATUS) WERE FOUND TO BE  
REACTIVE WITH CTF, HENCE, THE OBA MUST BE WORN  
INSIDE A GAS-TIGHT PROTECTIVE COVERALL. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-647 197 6/11 22/1 6/17  
CLARK (DAVID) CO INC WORCESTER MASS

RESEARCH AND DEVELOPMENT OF EXTRAVEHICULAR PROTECTIVE  
ASSEMBLY. (U)

DESCRIPTIVE NOTE: FINAL REPT., 2 JUL 62-30 APR 64,  
OCT 66 73P OSBORNE, NORMAN H. ROCK;

LEE C. I

CONTRACT: AF 33(657)-9532

PROJ: AF-6301

TASK: 630104

MONITOR: AMRL TR-66-143

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXTRAVEHICULAR ACTIVITY, PRESSURE SUITS),  
(\*PRESSURE SUITS, DESIGN), PROTECTIVE CLOTHING, LIFE  
SUPPORT, SPACE ENVIRONMENTS, LUNAR ENVIRONMENT, HELMETS,  
OXYGEN, VENTILATION, SHIELDING, THERMAL INSULATION,  
MATERIALS, JOINTS, SEALS (U)

A PROTOTYPE EXTRAVEHICULAR PRESSURE SUIT ASSEMBLY  
WAS DESIGNED AND FABRICATED FOR USE IN EARTH AND  
LUNAR ENVIRONMENTS. CONDITIONS OF SPACE  
ENVIRONMENT, PRELIMINARY DESIGN CONCEPTS, LABORATORY  
EVALUATIONS OF MATERIALS, THE INTERMEDIATE MODEL  
CONFIGURATION, AND THE FINAL SUIT ASSEMBLY ARE  
DESCRIBED IN DETAIL. THIS ASSEMBLY CONSISTS OF  
SPECIAL UNDERWEAR, LINER VENTILATION SYSTEM, GAS  
CONTAINER, RESTRAINT LAYER AND COVER, INSULATION,  
MICROMETEORITE PROTECTION, AN OUTER REFLECTIVE LAYER,  
AND A LIFE SUPPORT SYSTEM. THE LIFE SUPPORT SYSTEM  
IS A LIQUID OXYGEN, SEMI-CLOSED, RECIRCULATING-TYPE  
BACKPACK. THE USE OF NEW MATERIAL DISTINGUISHES  
THIS ASSEMBLY FROM CURRENT PRESSURE SUITS.  
RECOMMENDATIONS FOR FURTHER RESEARCH AND  
DEVELOPMENT ARE INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-647 828 4/17  
KENTUCKY UNIV LEXINGTON

SENSIBLE HEAT TRANSFER IN THE GEMINI AND APOLLO  
PRESSURE SUITS. (U)

DESCRIPTIVE NOTE: FINAL REPT. NOV 65-AUG 66,  
DEC 66 94P FUNK, J. E. HOEGLING, J.  
B. IDRAKE, R. M. , JR. HALL, J. F. , JR.  
KLEMM, F. K. :  
CONTRACT: AF 33(615)-3370  
PROJ: AF-7164, AF-7222  
TASK: 716409, 722207  
MONITOR: AMRL 66-173

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY  
NASA.

DESCRIPTORS: (•PRESSURE SUITS, HEAT TRANSFER), SURFACE  
TEMPERATURE, HUMAN BODY, HEAT FLUX, ENVIRONMENTAL TESTS,  
HEAT TRANSFER COEFFICIENTS, CONVECTION(HEAT TRANSFER),  
TEMPERATURE, SPACE ENVIRONMENTS (U)  
IDENTIFIERS: APOLLO, GEMINI (U)

THE RESULTS OF AN EXPERIMENTAL PROGRAM TO DETERMINE  
SENSIBLE HEAT TRANSFER EFFECTS IN THE GEMINI AND  
APOLLO PRESSURE SUITS ARE REPORTED. A COPPER  
MANIKIN MAINTAINED AT A CONSTANT SURFACE TEMPERATURE  
WAS USED AND THE OVERALL AVERAGE BODY SURFACE HEAT  
FLUX AND THE REGIONAL HEAT FLUX DISTRIBUTION WERE  
MEASURED. THE ENVIRONMENTAL VARIABLES STUDIED WERE  
VENTILATING AIR FLOWRATE, VELOCITY OF THE AIR MOVING  
OVER AND AROUND THE OUTSIDE SURFACE OF THE SUIT, AND  
PRESSURE. IN ADDITION, THE FOLLOWING  
DETERMINATIONS WERE MADE: THE HEAT TRANSFER  
COEFFICIENT BETWEEN THE MANIKIN SURFACE AND THE  
VENTILATING AIR, THE OVERALL THERMAL CONDUCTANCE  
BETWEEN THE VENTILATING AIR AND THE AIR MOVING OVER  
THE OUTSIDE SURFACE OF THE SUIT, THE THERMAL  
EMISSIVITY OF THE GEMINI SUIT, AND THE CONVECTION  
COEFFICIENT BETWEEN THE OUTSIDE SURFACE OF THE  
GEMINI SUIT AND THE AIR MOVING OVER THE OUTSIDE OF  
THE SUIT. THESE DATA MAY BE USED FOR HEAT  
BALANCES, DETERMINATION OF TEMPERATURES, AND  
EVALUATION OF THE INSULATION VALUE OF THE SUIT AND  
OUTSIDE AIR. THE INSULATION VALUE FOR THE AIR  
AMBIENT TO THE GEMINI SUIT WAS FOUND TO FOLLOW A  
RELATIONSHIP DIFFERENT FROM THE EMPIRICAL EQUATION  
FOR A NUDE MANIKIN. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-647 892 6/17 6/7  
NAVAL MISSILE CENTER POINT MUGU CALIF

TIMED HEAT-RELEASE CHEMICAL SYSTEM FOR UNDERWATER  
APPLICATIONS; THERMAL CREAM WARMS DIVERS AND DOWNED  
PILOTS IN OCEAN. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,  
FEB 67 26P TINKLEPAUGH, K. N. ICROWELL,  
C. J. : JR;  
REPT. NO. NMC-TM-67-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE COVERINGS, \*HEATING), (\*BODY  
TEMPERATURE, PROTECTIVE COVERINGS), (\*SURFACE ACTIVE  
SUBSTANCES, \*HEAT OF SOLUTION), DIVING, DITCHING,  
EXPOSURE (PHYSIOLOGY), HEAT TRANSFER, INHIBITION,  
UNDERWATER CLOTHING, THERMAL INSULATION,  
THERMOCHEMISTRY (U)

DIVERS AND AVIATORS DOWNED IN THE OCEAN REQUIRE  
WARMING TO PREVENT EXCESSIVE LOSS OF BODY HEAT. A  
COMBINATION OF CHEMICAL HEATING AND FABRIC INSULATION  
WAS EVALUATED FOR THIS PURPOSE. CHEMICAL HEATING  
RESULTS FROM THE PROGRAMMED HEAT OF SOLUTION OF AN  
INEXPENSIVE CREAM IN WATER. LESS THAN 25 POUNDS  
PER HOUR FOR THE AVIATOR AND 5 POUNDS PER HOUR FOR  
THE WET-SUIT DIVER WILL PROBABLY BE REQUIRED TO  
PREVENT EXCESSIVE LOSS OF BODY HEAT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-648 417 6/17 15/5  
IIT RESEARCH INST CHICAGO ILL

RESEARCH AND DEVELOPMENT OF BLAST PROTECTIVE  
FOOTWEAR, FABRICATION AND PROOFTESTING.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

JUL 66 116P FUJINAKA, E. S. IMACDONALD,

J. L. :

CONTRACT: DA-19-129-QM-2061

PROJ: 7-70-10-002

MONITOR: USA-NLABS, C/OM

TR-67-5-CH, TS-141

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHOES, PROTECTIVE CLOTHING), (\*PROTECTIVE  
CLOTHING, BLAST), WARFARE, ARMY EQUIPMENT, HONEYCOMB  
CORES, SANDWICH CONSTRUCTION, METAL PLATES, ALUMINUM,  
TESTS, LAND MINES

(U)

SEVERAL OF THE BLAST PROTECTIVE COMBAT BOOT  
CONCEPTS WHICH WERE DEVELOPED UNDER PHASE I OF  
THIS PROGRAM WERE FABRICATED AND PROOFTESTED UNDER  
PHASE II. ALL OF THE PROTECTIVE BOOTS  
INCORPORATED A HONEYCOMB FILLED SHANK. THE HIGH  
STRENGTH ALUMINUM HONEYCOMB FILLER RANGED FROM 2550  
PSI TO ABOUT 4200 PSI NOMINAL CRUSHING STRENGTH.  
IN ADDITION TO THE PROTECTIVE SHANK, SEVERAL MODELS  
OF PROTECTIVE BOOTS WERE FABRICATED WITH WEDGE-SHAPED  
HEEL CUT OUTS AND/OR METAL HEEL COUNTERS. A TOTAL  
OF 150 PAIRS OF PROTECTIVE BOOTS WERE FABRICATED WITH  
EIGHT POSSIBLE COMBINATIONS OF THE VARIABLES STUDIED.  
SIXTY-FOUR CADAVER SPECIMENS PROTECTED BY VARIOUS  
TYPES OF BOOTS WERE BLASTLOADED WITH THE M-14 LAND  
MINE; 27% OF THE PROTECTIVE BOOTS WITH CONVENTIONAL  
COUNTERS RESULTED IN A FOOT DAMAGE LEVEL WHICH COULD  
POSSIBLY BE 'SALVAGED FROM AMPUTATION' WHILE 63% OF  
THE PROTECTIVE BOOTS INCORPORATING A METAL HEEL  
COUNTER WERE 'POSSIBLE SALVAGES.' THIS COMPARES TO  
A ZERO PERCENT RATE OF POSSIBLE SALVAGE WITH  
CONVENTIONAL FOOTWEAR. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-652 207 6/17  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

PRELIMINARY STUDIES ON A NEW PARTIAL-PRESSURE SUIT  
CONCEPT. (U)

DESCRIPTIVE NOTE: REPT. FOR AUG 65-FEB 66.  
FEB 67 13P DAVIS, JEFFERSON C. BOYLE,  
JOSEPH . IIRITZINGER, FREDERICK R. I  
REPT. NO. SAM-TR-67-15  
PROJ: AF-7750

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, DESIGN), AEROSPACE  
MEDICINE, SPACE FLIGHT, PROTECTION, SKIN(ANATOMY),  
PRESSURE (U)

IN PRELIMINARY STUDIES, A NEW PARTIAL-PRESSURE SUIT  
HAS BEEN DEVELOPED AS AN EMERGENCY GARMENT FOR HIGH-  
ALTITUDE AIRCRAFT FLIGHT, FOR CONTINUOUS WEAR IN  
EXTENDED SPACE FLIGHT, AND FOR CREWMEMBERS OF THE  
PROPOSED SUPERSONIC TRANSPORT. THE USAFSAM  
EXPERIMENTAL SUIT WAS DESIGNED FOR COMFORT IN THE  
UNPRESSURIZED STATE, YET TO PROVIDE ADEQUATE PRESSURE  
PROTECTION AT ALTITUDE. MECHANICAL PRESSURE IS  
APPLIED TO THE SKIN BY EXPANSION OF AIR SEALED IN  
RUBBER TUBES SEWED BETWEEN TWO LAYERS OF POROUS  
FABRIC. AIR IN THE TUBES EXPANDS AT ALTITUDE  
ACCORDING TO BOYLE'S LAW. IN MANNED FLIGHTS TO  
75,000 FEET, SKIN PRESSURE MEASUREMENTS ARE EQUAL TO  
THOSE OF THE PARTIAL-PRESSURE SUIT! YET AT GROUND  
LEVEL AND UP TO 25,000 TO 30,000 FEET, 'SHIRT SLEEVE  
COMFORT' IS APPROACHED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-652 248 6/17  
LITTON SYSTEMS INC BEVERLY HILLS CALIF SPACE SCIENCES  
LABS

RESEARCH AND DEVELOPMENT OF HELMET FACEPIECES FOR  
SPACE PROTECTIVE ASSEMBLIES. (U)

DESCRIPTIVE NOTE: FINAL REPT., 30 JUN 64-30 DEC 65,  
JAN 67 116P ROCCO, R. M. I  
REPT. NO. PUB-4832  
CONTRACT: AF 33(615)-1875  
PROJ: AF-7222  
MONITOR: AMRL TR-64-193

UNCLASSIFIED REPORT

DESCRIPTORS: (•PRESSURE SUITS, •PROTECTIVE MASK  
FACEPIECES), HELMETS, ASTRONAUTS, EXTRAVEHICULAR  
ACTIVITY, DESIGN, SPACE ENVIRONMENTS, ANTIFOGGING  
AGENTS, SKIN(ANATOMY), TEMPERATURE, SOLAR RADIATION,  
LAMINATED GLASS (U)

THE RESEARCH AND DEVELOPMENT OF AN ASPHERICAL GLASS  
FACEPIECE FOR A FULL PRESSURE SPACESUIT COMPATIBLE  
WITH AF HELMET AP-22F-2, CAPABLE OF PROTECTING  
AN ASTRONAUT FROM HAZARDS OF SPACE DURING A 4-HOUR  
EXTRAVEHICULAR MISSION ARE DESCRIBED. THE  
TRANSPARENCY WAS TO REMAIN FOG-FREE DURING A  
CONDITION OF ZERO AIR FLOW AND 100 PERCENT RELATIVE  
HUMIDITY. IN ADDITION, FACEPIECE DESIGN WAS TO  
PROVIDE SUFFICIENT ATTENUATION OF SOLAR  
ELECTROMAGNETIC RADIATION TO ASSURE AN ASTRONAUT MEAN  
FACIAL SKIN TEMPERATURE NOT IN EXCESS OF 100F.  
INITIAL EFFORT WAS DIRECTED TOWARD DEFINITION OF  
THE EXTREME SPACE ENVIRONMENTS FOR THE DEFINED ORBIT.  
THESE ENVIRONMENTS WERE SIMULATED IN THE LABORATORY  
FOR COMPATIBILITY TESTING OF CANDIDATE MATERIALS  
(GLASSES, OPTICAL COATINGS, AND ELECTRICALLY  
CONDUCTIVE COATINGS). ADDITIONAL TESTS WERE  
DEvised TO INVESTIGATE THE EFFECTIVENESS OF ANTI-FOG  
DEVICES AND SOLAR REFLECTIVE COATINGS. TEST  
RESULTS INDICATE THAT, FOR THE PARTICULAR FACEPIECE  
CONFIGURATION AND INTERNAL AND EXTERNAL SPACESUIT  
ENVIRONMENTS DEFINED, A POWER DISSIPATION OF 0.33  
WATT/SQ IN IS REQUIRED TO MAINTAIN A FOG-FREE  
FACEPIECE; AND A MEAN FACIAL SKIN TEMPERATURE OF  
100F WILL NOT BE EXCEEDED PROVIDED THE SOLAR  
RADIATION INCIDENT ON THE ASTRONAUT'S SKIN IS NOT  
GREATER THAN 0.43 SOLAR CONSTANT. FACEPIECE  
MATERIALS WERE SELECTED FROM CANDIDATES WHICH  
SATISFACTORILY WITHSTOOD THE EXTREME ENVIRONMENTAL (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-652 405 6/17 11/10  
NAVY ELECTRONICS LAB SAN DIEGO CALIF

DIVERS' BODY HEAT LOSS: DESCRIBES A STUDY OF THE  
ENDURANCE OF UNDERWATER SWIMMERS WEARING A VARIETY OF  
FOAM NEOPRENE WET SUITS AND IMMersed AT 30-32F IN THE  
NEL ARCTIC POOL. (U)

DESCRIPTIVE NOTE: RESEARCH REPT.,  
OCT 66 39P BEAGLES, J. A. ICOIL, E.  
F. ;

REPT. NO. NEL-1408  
PROJ: SR-011-01-01  
TASK: 0401

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, ARCTIC REGIONS),  
(\*SYNTHETIC RUBBER, UNDERWATER CLOTHING), DESIGN, SOCKS,  
GLOVES, BODY TEMPERATURE, EXPOSURE (PHYSIOLOGY),  
EFFECTIVENESS, SCUBA DIVERS (U)

A STUDY WAS MADE PRIMARILY TO OBTAIN DATA  
APPLICABLE TO THE DESIGN OF AN OPTIMUM PROTECTIVE  
SUIT FOR DIVERS IN ARCTIC ENVIRONMENTS. THE  
EXPERIMENTAL METHOD EMPLOYED SWIMMERS WHO PERFORMED  
SHALLOW DIVES IN THE NEL ARCTIC POOL AT 30-32F.  
SKIN TEMPERATURE WAS RECORDED BY THE USE OF  
SUITABLY LOCATED THERMISTORS, AND OTHER DATA WERE  
OBTAINED FROM BLOOD SAMPLES DRAWN IMMEDIATELY BEFORE  
AND AFTER EACH DIVE. RESULTS SUGGEST THAT A FOUR-  
PIECE FOAM NEOPRENE WET SUIT CONSISTING OF A 1/8-INCH  
TIGHT-FITTING INNER SUIT AND A 1/4-INCH SNUG-FITTING  
OUTER SUIT ALONG WITH TWO PAIRS OF NEOPRENE SOCKS AND  
MITTENS WOULD PROVIDE THE OPTIMUM COMBINATION OF  
PROTECTION AND MOBILITY FOR DIVERS IN ARCTIC WATERS.  
(AUTHOR) (U)

UNCLASSIFIED

DNC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-652 653 6/17 11/9  
NORTHROP SPACE LABS HAWTHORNE CALIF SPACE MATERIALS  
LAB

RESEARCH ON CLOSED-CELL SPONGE AS A PRESSURE  
TECHNIQUE FOR PROTECTIVE ASSEMBLIES.

(U)

DESCRIPTIVE NOTE: FINAL REPT., 10 MAY 66-5 JUL 66,  
FEB 67 74P HEITZ, R. M. JONES, G. W.

CONTRACT: AF 33(615)-2953  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-66-183

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*FOAM RUBBER),  
(\*PRESSURE SUITS, SPACE FLIGHT), VACUUM, PHYSICAL  
PROPERTIES, VINYL PLASTICS, PROCESSING, PROTECTION,  
TABLES(DATA), SPACE ENVIRONMENTS, POLYVINYL CHLORIDE (U)

A CLOSED-CELL FOAM WAS DEVELOPED FOR INTEGRATION  
INTO A PARTIAL PRESSURE SUIT THAT WOULD PRODUCE  
PRESSURE ON THE HUMAN BODY TO PROVIDE PROTECTION IN A  
VACUUM ENVIRONMENT. A SURVEY OF LITERATURE AND  
INDUSTRIAL ORGANIZATIONS WAS FOLLOWED BY AN EXTENSIVE  
EXPERIMENTAL STUDY ON KNOWN FOAM SYSTEMS AND THE  
DEVELOPMENT OF NEW FOAM SYSTEMS. THE EVALUATION  
AND DEVELOPMENT OF THE FOAM COMPOSITION AND  
PROCESSING TECHNIQUES ARE DESCRIBED. FROM THIS  
STUDY, THE FORMULATION AND PROCESSING OF SUITABLE  
VINYL CLOSED-CELL FOAMS WERE DEVELOPED WITH  
REPRODUCIBLE PROPERTIES IN CONTROLLED PROCESSES.  
THEIR PHYSICAL PROPERTIES PASSED SUCCESSFULLY THE  
REQUIRED CYCLING TEST WHEREIN THE FOAMS, PROPERLY  
RESTRAINED AND EXPOSED TO VACUUM, EXERTED A PRESSURE  
RESPONSE OF 7 PSIA OR 3.5 PSIA DEPENDING UPON THE  
PROCESS USED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOH08

AD-655 147 6/17  
QUARTERMASTER RESEARCH AND DEVELOPMENT CENTER NATICK  
MASS

SOME EFFECTS OF ABSORBENCY OF CLOTHING MATERIALS. (U)

JUN 56 4P PRATT, R. L. IFONSECA, G.  
F. WOODCOCK, A. H. I  
REPT. NO. RESEARCH-STUDY-BP-3  
PROJ: DA-7-64-12-004A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, ABSORPTION), HEAT  
TRANSFER, TEXTILES, WOOLEN TEXTILES, MOISTURE (U)

IT IS CONCLUDED THAT ABSORBED MOISTURE CAN CAUSE  
TRANSIENT EFFECTS IN HEAT TRANSFER WHICH ARE  
APPRECIABLE FOR AN HOUR OR MORE. THESE TRANSIENT  
EFFECTS MAY BE PUT TO ADVANTAGE BY USING ABSORBENT  
MATERIALS SUCH AS WOOL WHICH STABILIZES HEAT LOSS  
FROM A MAN WHO IS CHANGING HIS ENVIRONMENT SUCH AS  
GOING IN AND OUT OF HEATED BUILDINGS. HOWEVER,  
SUCH ABSORBENT MATERIALS WOULD BE A DISADVANTAGE TO  
PERSONS LIKE THE COMBAT SOLDIER WHO REMAINS IN A  
RELATIVELY STABLE OUTDOOR ENVIRONMENT BUT CHANGES HIS  
ACTIVITY. HENCE, NONABSORBENT MATERIALS SUCH AS  
SOME OF THE SYNTHETICS MAY BE PREFERABLE.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-655 834 6/17  
HONEYWELL INC ST PAUL MINN RESEARCH DEPT

AUTOMATIC TEMPERATURE CONTROL FOR LIQUID-COOLED  
FLIGHT SUITS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 66-MAR 67,  
AUG 67 83P MERRILL, GLEN L. ISTARR,  
JAMES B. I  
REPT. NO. 12045-FR1  
CONTRACT: N156-48547  
TASK: MFO22.02.02-6001  
MONITOR: NADC-AC 6702

UNCLASSIFIED REPORT

DESCRIPTORS: (FLIGHT CLOTHING, TEMPERATURE CONTROL),  
AUTOMATIC, LIQUID COOLED, FLUID AMPLIFIERS, DETECTORS,  
SKIN (ANATOMY), SURFACE TEMPERATURE, WATER, CONTROL  
SYSTEMS (U)

AN AUTOMATIC CONTROL SYSTEM FOR MAINTAINING  
CONSTANCY OF SKIN TEMPERATURE (T SUB S) HAS BEEN  
SHOWN TO BE FEASIBLE BY USING SPECIAL SENSORS TO  
DETECT CHANGES IN T SUB S AND PROPORTIONAL FLUID  
AMPLIFIERS TO REGULATE THE TEMPERATURE OF WATER  
FLOWING THROUGH THE TUBING OF A WATER-COOLED  
UNDERGARMENT. TESTS HAVE INDICATED THE RESPONSE OF  
THE SYSTEM WHEN T SUB S INCREASED DUE TO EXERCISE  
OR TO AN EXTERNAL HEAT LOAD. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AN-657 436 6/17 6/7  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA

A PROTECTIVE PASSENGER SMOKE HOOD. (U)

APR 67 12P MCFADDEN, ERNEST B. ;  
REYNOLDS, H. I. IFUNKHOUSER, GORDEN E. ;  
MONITOR: FAA-AM 67-4

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE PROTECTIVE CLOTHING, \*BREATHING APPARATUS), POLYAMIDE PLASTICS, AMIDES, POLYMERS, FILMS, METAL COATINGS, AIRCRAFT FIRES, SMOKE, SURVIVAL(PERSONNEL) (U)

SEVERAL RECENT JET TRANSPORT ACCIDENTS HAVE FOCUSED THE ATTENTION OF THE AVIATION INDUSTRY UPON SMOKE AND TOXIC GASES AS CAUSAL FACTORS OF PASSENGER INCAPACITATION AND FAILURE TO EVACUATE AIRCRAFT BEFORE FIRE AND HEAT RENDER THE ENVIRONMENT UNINHABITABLE. IF IT WERE POSSIBLE TO PROVIDE PASSENGERS WITH A SHORT DURATION SUPPLY OF BREATHING AIR SUFFICIENT TO MAINTAIN THE PASSENGERS' MOBILITY AND ALLOW COMPLETION OF AIRCRAFT EVACUATION, SURVIVAL WOULD BE ENHANCED. SIMPLE, LIGHT-WEIGHT, BAG-SHAPED HOODS INCORPORATING A NECK SEAL WERE FABRICATED OF A THIN PLIABLE, HIGH-TEMPERATURE, TRANSPARENT, POLYIMIDE PLASTIC FILM. POLYIMIDE FILM HAS NO MELTING POINT BUT REPORTEDLY CHARS AT 1500 DEG F. IN A MORE ADVANCED DESIGN, THIN TRANSPARENT METALLIC COATINGS WERE APPLIED TO THE POLYIMIDE FILM IN ORDER TO REFLECT UP TO 90% OF THE RADIANT HEAT. UPON EXPOSURE TO A SPECIFIC INFRA-RED HEAT FLUX, FACIAL SKIN TEMPERATURES OF 114-115 F WERE RECORDED ON TWELVE HUMAN SUBJECTS WEARING THE NON-METALIZED HOOD. UNDER IDENTICAL CONDITIONS, SKIN TEMPERATURES OF THE SAME SUBJECTS WEARING THE METALIZED HOOD DID NOT EXCEED 99 F. CAPABILITY OF THE HOOD TO PROVIDE SHORT TERM AND EXTENDED PROTECTION FROM SMOKE AND FLAME INHALATION IN A FIRE ENVIRONMENT IS DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOS

AD-657 853 15/5  
NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA AERONAUTICAL  
MATERIALS LAB.

LABORATORY SHRINKAGE EVALUATION OF NOMEX SUMMER  
FLIGHT SUITS.

(U)

APR 67 6P KELLY, WARREN T. I  
REPT. NO. NAEC-AHL-2604  
TASK: A32-013-200/1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, SHRINKAGE), (\*FIRE  
RESISTANT TEXTILES, SHRINKAGE), POLYAMIDE PLASTICS,  
CLEANING COMPOUNDS, CLEANING, CAMOUFLAGE (U)

SHRINKAGE OF COVERALLS MADE OF OLIVE GREEN AND  
CAMOUFLAGE PRINTED NOMEX HERRINGBONE TWILL CLOTHS  
LAUNDERED BY FORMULA S IS REPORTED. COVERALL  
DIMENSIONS, EXCEPT FOR CROTCH SEAM THAT APPARENTLY  
PUCKERS, ARE NOT SHORTENED EXCESSIVELY.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-658 204 6/17 11/1 13/5  
NORTHROP SPACE LABS HAWTHORNE CALIF

PRESSURE SEALING CLOSURES FOR FULL PRESSURE  
PROTECTIVE SUIT ASSEMBLIES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 15 JUL 66-10 FEB 67,  
JUN 67 62P HEITZ, ROGER M. BROWN, GARY  
G. I

REPT. NO. NSL-67-177  
CONTRACT: AF 33(615)-5372  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-67-59

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*FASTENINGS), (\*GAS  
SEALS, PRESSURE SUITS), DESIGN, MANUFACTURING,  
MOLDINGS

(U)

LONGITUDINAL AND CIRCULAR PRESSURE SEALING CLOSURES  
WERE DESIGNED AND DEVELOPED FOR FULL PRESSURE  
PROTECTIVE ASSEMBLIES FROM A DESIGN CONCEPT PROVIDED  
BY THE AEROSPACE MEDICAL RESEARCH  
LABORATORIES, INVENTION DISCLOSURE NUMBER 66/588.  
THIS STUDY CONSISTED OF (1) DESIGNING PRESSURE  
CLOSURE DEVICES, (2) SELECTING SUITABLE MATERIALS  
FOR THE FABRICATION OF THE SEALING CLOSURE PARTS AND  
THE CYLINDERS TO INCLUDE THE CLOSURES, (3)  
SELECTING AN APPROPRIATE FABRICATION PROCESS FOR THE  
CLOSURE SEALING PARTS, AND (4) FABRICATING AND  
TESTING THE BREADBOARD AND DEMONSTRATION MODELS  
CONTAINING EITHER THE CIRCULAR OR LONGITUDINAL  
CLOSURES. AN EPDM ELASTOMERIC MATERIAL WAS FOUND  
TO BE SUITABLE FOR THE FABRICATION OF THE CLOSURE  
SEALING PARTS WHICH WERE MOLDED USING AN ESTABLISHED  
MOLDING TECHNIQUE. THE FABRICATED BREADBOARD AND  
DEMONSTRATION MODELS PASSED SUCCESSFULLY THE REQUIRED  
TESTS WHEREIN LEAK RATES WERE DETERMINED FROM 0 TO 5  
PSIG, AND EXPOSURE TO PRESSURE UP TO 12 PSIG WERE  
PERFORMED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY, SEARCH CONTROL NO. /ZOM08

AD-658 508 6/17 6/19  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT

EVALUATION OF A WET SUIT IN CONJUNCTION WITH ANTI-  
BLACKOUT PROTECTION. (U)

AUG 67 14P PATTON, ROBERT M. I  
REPT. NO. NADC-MR-6713  
PROJ: NAVMED-MFO22.02.02-6002  
TASK: MFO22.02.02-6002-11

UNCLASSIFIED REPORT

DESCRIPTORS: (PRESSURE SUITS, ACCELERATION TOLERANCE),  
BLACKOUT (PHYSIOLOGY), EFFECTIVENESS, ACCEPTABILITY,  
AEROSPACE MEDICINE (U)  
IDENTIFIERS: WET SUITS (U)

AN INVESTIGATION WAS UNDERTAKEN TO TEST AND  
EVALUATE A WET SUIT WORN IN CONJUNCTION WITH THE  
MARK II ANTI-G SUIT UNDER ACCELERATION.  
EIGHT SUBJECTS WERE RUN ON THE CENTRIFUGE UNDER  
CONDITIONS OF NO PROTECTION, WEARING AN ANTI-G SUIT  
ONLY, WEARING AN ANTI-G SUIT UNDER THE WET SUIT,  
AND WEARING THE ANTI-G SUIT OVER THE WET SUIT.  
RESULTS INDICATED THAT ACCELERATION TOLERANCE WAS  
SIGNIFICANTLY IMPROVED BY THE USE OF THE ANTI-G  
SUIT, BUT THERE WAS NO STATISTICALLY RELIABLE  
DIFFERENCE BETWEEN THE ANTI-G SUIT ONLY AND THE TWO  
ANTI-G SUIT/WET SUIT COMBINATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-659 974 6/17 11/5  
PRODESCO INC PERKASIE PA.

DEVELOPMENT OF HIGH-INTENSITY THERMAL PROTECTIVE  
FABRIC. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 67 43P BROCKMANN, HAL E. DONNELLY,  
ROBERT I  
REPT. NO. PNAS-94  
CONTRACT: N62269-3129  
TASK: A34 531/2021/FO12-10-02  
MONITOR: NADC-MR 6715

UNCLASSIFIED REPORT

DESCRIPTORS: (•PROTECTIVE CLOTHING, THERMAL RADIATION),  
(•HEAT RESISTANT MATERIALS, PROTECTIVE CLOTHING),  
(•TEXTILES, PROTECTIVE CLOTHING), METALLIC TEXTILES,  
SYNTHETIC FIBERS, PERFORMANCE(ENGINEERING),  
FOILS(MATERIALS), ALUMINUM, POLYESTER PLASTICS, FILMS(U)

THE DEVELOPMENT OF A FABRIC THAT WOULD BE PROTECTIVE AGAINST HIGH-INTENSITY THERMAL ENERGY WAS APPROACHED USING THREE CRITERIA, THE FIRST BEING THAT THE MAJORITY OF THE FIBER IN THE FABRIC BE A TEXTILE MATERIAL. AFTER EVALUATING VARIOUS FIBERS, NOMEX WAS DETERMINED TO BE THE PRIMARY FIBER FOR THIS STRUCTURE. THE SECOND PARAMETER EXAMINED WAS THAT OF A KNOWN SPACING BETWEEN TWO LAYERS OF FABRIC STUDIED IN VARIOUS WAYS. THE FINAL CONCEPT ARRIVED AT WAS A TWO-LAYER FABRIC THAT WAS INTIMATELY TIED TOGETHER AT 3/8 INCH INTERVALS. THE THIRD EFFORT WAS DIRECTED TOWARD FINDING A FIBROUS MATERIAL THAT WOULD ABSORB OR DISTRIBUTE THE THERMAL ENERGY WITHIN THE FABRIC ITSELF. OF THE MANY METALLIC AND INORGANIC MATERIALS EVALUATED, A SLIT ALUMINUM FOIL/ MYLAR FILM YARN WAS CONSIDERED TO BE THE OPTIMUM STRUCTURE FOR ITS WEIGHT AND BULK. THE FABRIC DEVELOPED FROM THIS FIBER AND STRUCTURE EVALUATION WAS A 7.3 OZ/SQ YD TWO-LAYER NOMEX FABRIC TIED TOGETHER AT INTERVALS, EITHER WITH OR WITHOUT A SLIT ALUMINUM SCRIM BETWEEN THE TWO LAYERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-663 634 6/17 6/7  
NAVAL SUBMARINE BASE NEW LONDON CONN

EVALUATION FOR SERVICE USE OF A PROTO-TYPE SWIMMER'S  
RESCUE SUIT. (U)

DESCRIPTIVE NOTE: MEMORANDUM REPT.,  
MAR 58 13P RENTSCH, SAUEL B. , JR!  
REPT. NO. SBNL-MEMO-58-1  
PROJ: NAVMED-NM-21-01-20.01  
TASK: NM-21-01-20.01-01

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SEA RESCUES, UNDERWATER CLOTHING),  
(\*UNDERWATER CLOTHING, PERFORMANCE(ENGINEERING)),  
SWIMMING, DIVING, EFFECTIVENESS, BREATHING APPARATUS,  
MOISTUREPROOFING, BUOYANCY, THERMAL INSULATION, ELASTIC  
PROPERTIES, ACCEPTABILITY (U)

THE INVESTIGATION WAS ONE OF A SERIES OF TESTS AND  
EVALUATIONS OF PROTOTYPE RESCUE (SWIM) SUITS  
CONDUCTED BY NAMRL IN COOPERATION WITH THE  
RESEARCH SECTION OF THE NAVAL CLOTHING  
SUPPLY OFFICE, BROOKLYN. THE SUIT WAS TRIED  
OUT UNDER SERVICE OPERATING CONDITIONS DURING  
EXERCISES ABOARD TWO SUBMARINE RESCUE AND SALVAGE  
VESSELS (ASR'S 15 AND 16) DURING JUNE AND  
JULY 1957 AND JANUARY 1958. THE SCOPE OF THE  
EVALUATIONS INCLUDED SWIMMING, SURFACE DIVING,  
FLOATING, SIMULATED RESCUING OF PERSONNEL, AND USE  
WITH AN AQUA LUNG FOR SUCH PURPOSES AS EXAMINING THE  
BOTTOM OF SHIPS, CHECKING ANCHOR CHAINS FOR FOULING,  
AND FOR TAKING UNDERWATER PICTURES. A NUMBER OF  
FAVORABLE FEATURES WERE NOTED--WATERPROOFNESS,  
BUOYANCY, WARMTH, AND A NUMBER OF UNFAVORABLE  
FEATURES WERE TABULATED FOR USE IN MODIFICATION OF  
THESE SUITS, SUCH AS POOR LOCATIONS OF THE FLUTTER  
VALVE AND THE CHIN SEGMENT OF THE FACE OPENING. IT  
WAS DIFFICULT TO GET INTO THE SUIT AND TOOK TOO LONG  
A TIME, AND THE MATERIAL WAS SO LIMITED IN ELASTICITY  
AS TO CAUSE DISCOMFORT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-663 886 6/7 6/17  
NAVAL SUBMARINE MEDICAL CENTER GROTON CONN

FIELD EVALUATION OF MODIFIED SUBMARINE RESCUE AND  
ESCAPE SUITS. (U)

DESCRIPTIVE NOTE: MEMORANDUM REPT.,  
FEB 56 12P SCHULTE, JOHN H. ;  
REPT. NO. NSMC-MR-56-3  
PROJ: NAVMED-NM-002-013.01.03

UNCLASSIFIED REPORT

DESCRIPTORS: (SUBMARINE ESCAPE, UNDERWATER CLOTHING),  
SEA RESCUES, COTTON TEXTILES, MODELS(SIMULATIONS),  
UNDERWEAR, RUBBER, MANEUVERABILITY (U)

THE STUDY EVALUATES MODELS OF THE TWO-PIECE  
SUBMARINE RESCUE AND ESCAPE SUITS WHICH HAVE  
INCORPORATED SEVEN ALTERATIONS RECOMMENDED ON THE  
BASIS OF PREVIOUS FIELD TRIALS. FOR SUBMARINE  
RESCUE AND ESCAPE, THE GARMENT CONSIDERED MORE  
SATISFACTORY IS THE TWO-PIECE SUIT OF TWO-WAY STRETCH  
MATERIAL DYE INTERNATIONAL ORANGE, FITTED WITH A  
NECK GASKET, HEAD STRAPS AND TWO RELIEF VALVES, ONE  
AT THE BACK OF THE HEAD AND ONE BETWEEN THE  
SHOULDERS. (AUTHOR) (U)

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-663 907 6/11 6/17 6/19  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE CREW  
EQUIPMENT DEPT

PHYSIOLOGICAL EFFECTS OF DIFFERENT OXYGEN FLOW RATES  
AND AMBIENT TEMPERATURES ON PRESSURE-SUITED SUBJECTS  
PERFORMING WORK AT ALTITUDE. (U)

DESCRIPTIVE NOTE: PHASE REPT.,  
DEC 67 13P SANTAMARIA, LOUIS J. ;  
HARRIGAN, DAVID J. , JR. ; RADLIFF, MEREDITH H. ;

REPT. NO. NADC-AC-6708  
TASK: A34-531-060/20

UNCLASSIFIED REPORT

DESCRIPTORS: (+PRESSURE SUITS, VENTILATION), (+HEAT  
TOLERANCE, PRESSURE SUITS), OXYGEN, GAS FLOW, LIFE  
SUPPORT, ASTRONAUTS, SPACE FLIGHT, MANNED SPACECRAFT,  
EXERCISE (PHYSIOLOGY), BODY TEMPERATURE, PULSE RATE, BODY  
WEIGHT, SIMULATION (U)

IN A SERIES OF TESTS CONDUCTED AT DIFFERENT AMBIENT  
TEMPERATURES, THE PHYSIOLOGICAL EFFECTS OF VARIOUS  
LEVELS OF FLOW RATE OF VENTILATING O<sub>2</sub> WERE  
INVESTIGATED. PRESSURE-SUITED SUBJECTS UNDERWENT  
MODERATE WORK STRESS ON A BICYCLE ERGOMETER IN AN  
ALTITUDE CHAMBER MAINTAINED AT 5 PSIA. THE  
TEMPERATURE AND RELATIVE HUMIDITY OF THE VENTILATING  
O<sub>2</sub> WERE MAINTAINED CONSTANT AT 55F AND 90-95%,  
RESPECTIVELY; THE DURATION OF THE RUNS WAS FIXED AT 2  
HOURS. WITHIN THE LIMITS OF THE AMBIENT  
TEMPERATURES AND VENTILATING FLOW RATES EMPLOYED IN  
THIS STUDY, ONLY SLIGHT ADVANTAGES WERE GAINED BY  
INCREASING FLOW RATE, AS OBSERVED IN TERMS OF THE  
PHYSIOLOGICAL MEASUREMENTS MADE IN THIS STUDY.  
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-664 122 6/17 11/5  
THIOLKOL CHEMICAL CORP MARSHALL TEX LONGHORN DIV

SPECIAL SAFETY STUDY. TESTING 'NOMEX' MATERIAL AS  
HEAT RESISTANT CLOTHING FOR INDUSTRIAL APPLICATION. (U)

JUL 67 44P  
REPT. NO. LD-17-67  
CONTRACT: DA-11-173-AMC-200(A)

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE RESISTANT TEXTILES, NYLON), (\*FIRE  
PROTECTIVE CLOTHING, PERFORMANCE(ENGINEERING), FIRE  
SAFETY, INSTRUMENTATION, TEST METHODS, HEAT TRANSFER,  
HEAT FLUX, HEAT TOLERANCE, THRESHOLDS(PHYSIOLOGY),  
STATIC ELECTRICITY, CLEANING, COSTS (U)  
IDENTIFIERS: NOMEX (U)

THE OBJECTIVE OF THIS SERIES OF TESTS WAS TO  
DETERMINE THE BEST COMBINATION OF PROTECTIVE CLOTHING  
(UTILIZING 'NOMEX' MATERIAL) THAT WOULD AFFORD  
THE LINE WORKER OPTIMUM PROTECTION AGAINST INCIDENT  
CONDITIONS. THE DATA WAS RECORDED AND DEVELOPED  
FOR A PERIOD OF TIME UP TO FOURTEEN SECONDS. THE  
FIRST THREE TO FIVE SECONDS, HOWEVER, ARE THE MOST  
CRITICAL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-665 042 15/5 6/17  
ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK  
MASS

MOISTURE TRANSFER THROUGH IMPERMEABLE FOAM  
INSULATIONS.

(U)

APR 67 SP FONSECA, GEORGE F. ;

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN TEXTILE RESEARCH  
JOURNAL, V37 N12 P1072-6 1967.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*EXPANDED PLASTICS),  
THERMAL INSULATION, MOISTURE, PERMEABILITY, TEXTILES,  
WIND, MATHEMATICAL ANALYSIS (U)

THE BIOPHYSICAL CHARACTERISTICS OF PERFORATED FOAM  
SYSTEMS ARE PRESENTED IN TERMS OF EXPERIMENTALLY  
DETERMINED VALUES OF INSULATION AND MOISTURE VAPOR  
PERMEANCE (MVP). THE EFFECT OF WINDBREAK MOTION  
ON THE MOISTURE VAPOR TRANSFER THROUGH SUCH SYSTEMS  
IS DISCUSSED. A THEORETICAL COMPARISON AMONG  
SYSTEMS IS GIVEN IN TERMS OF ENVIRONMENTAL RANGE  
USING THE CONCEPT OF MOISTURE PERMEABILITY INDEX.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-665 388 4/17  
ARMY NATICK LABS MASS CLOTHING AND ORGANIC MATERIALS  
LAB

ADVANCES IN THE DEVELOPMENT OF HEAD PROTECTION FOR  
AIRCRAFT CREWMEN. (U)

FEB 67 14P LASTNIK, ABRAHAM L. ;  
REPT. NO. C/ED-45  
PROJ: DA-1M6-43303-D547  
MONITOR: USA-NLABS TR-67-53-CM

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELMETS, PERFORMANCE(ENGINEERING)),  
(\*FLIGHT CLOTHING, FLIGHT CREWS), NYLON, LAMINATES,  
PROTECTION, CRASH INJURIES, EYE, POLYESTER PLASTICS, EAR  
PROTECTORS, NOISE, ATTENUATION, IMPACT TESTS (U)

THE U.S. ARMY'S NEW NYLON FABRIC LAMINATE  
FLIGHT HELMET PROVIDES INCREASED CRASH AND BALLISTIC  
PROTECTION OVER THAT OF OTHER CURRENT U.S.  
MILITARY FLIGHT HELMETS. A NEWLY DEVELOPED  
RETENTION DEVICE, BASED ON AN ORTHOPEDIC SLING FOR  
NECK TRACTION, ASSURES RETENTION OF THE HELMET. A  
NEW VISOR OF POLYCARBONATE RESIN PROVIDES EYE  
PROTECTION AGAINST IMPINGING FRAGMENTS. IT RESISTS  
SHATTERING AND PENETRATION. RESEARCH STUDIES  
REVEAL THE FEASIBILITY OF ATTENUATING LOW FREQUENCY  
NOISE, AT THE EAR, WITH RELATIVELY SMALL VOLUME EAR  
CUPS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-665 833 6/17 6/11  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

FLAME PROTECTION AFFORDED MICE BY A NONCOMBUSTIBLE  
GARMENT IN 100% OXYGEN ATMOSPHERES. (U)

DESCRIPTIVE NOTE: REPT. FOR 24 MAY-8 JUN 67,  
SEP 67 23P HARGREAVES, JOHN J. IULVEDAL,  
FRODE I  
REPT. NO. SAM-TR-67-91  
PROJ: AF-7930  
TASK: 793002

UNCLASSIFIED REPORT

DESCRIPTORS: (FIRE PROTECTIVE CLOTHING, CLOSED  
ECOLOGICAL SYSTEMS), FIRE SAFETY, FLAME PROPAGATION,  
OXYGEN, FIRES, FLAMMABILITY, ASTRONAUTS, TEST METHODS,  
SPACECRAFT CABINS, SIMULATION, PERFORMANCE(ENGINEERING),  
AEROSPACE MEDICINE (U)

THIRTY-NINE MICE, WITH HAIR CLIPPED OR UNCLIPPED,  
WERE CLOTHED IN A NONCOMBUSTIBLE GARMENT, BETA  
CLOTH, AND SUBJECTED TO FLAME IGNITION IN 100%  
OXYGEN ATMOSPHERES FROM 744 TO 190 MM. HG TOTAL  
PRESSURE. THE EXPERIMENTAL RESULTS SHOWED THAT THE  
NONCOMBUSTIBLE GARMENT AFFORDED PROTECTION FROM  
COMBUSTION AND FLAME PROPAGATION ONLY IF THE ANIMAL'S  
HAIR HAD BEEN PREVIOUSLY CLIPPED. FURTHER STUDIES  
SHOULD BE CONDUCTED IN AN EFFORT TO ASSURE MAN'S  
PROTECTION. (AUTHOR) (U)

UNCLASSIFIED

ADC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-666 226 6/17 13/8  
MINE SAFETY APPLIANCES CO PITTSBURGH PA

ENGINEERING RESEARCH PROTOTYPE DISTRIBUTION SYSTEMS  
FOR THERMALIBRIUM CLOTHING. (U)

DESCRIPTIVE NOTE: TECHNICAL REP7. (FINAL), 5 JUL 63-  
26 APR 67,

OCT 67 45P AUSTIN, HARRY W. THESS, W.  
C. THEODORE, MICHAEL I  
CONTRACT: DA-19-129-AMC-118(N)  
PROJ: DA-1C025601A032  
MONITOR: USA-NLABS, C/OM TR-68-21-CM, 37

UNCLASSIFIED REPORT

DESCRIPTORS: (PROTECTIVE CLOTHING, MANUFACTURING),  
QUALITY CONTROL, DESIGN, TEST METHODS, VENTILATION,  
VALVES, TEXTILES, MATERIALS, MILITARY SUPPLIES,  
PRODUCTION, SPECIFICATIONS (U)  
IDENTIFIERS: THERMALIBRIUM CLOTHING (U)

THE RESULTS OF MATERIAL OPTIMIZATION, FABRICATION  
TECHNIQUES AND THE FABRICATION OF PROTOTYPE AIR  
DISTRIBUTION SYSTEMS FOR THERMALIBRIUM CLOTHING ARE  
SUMMARIZED. THE ENGINEERING RESEARCH EFFORT WAS  
ACCOMPLISHED IN TWO WORK PHASES. THE INITIAL PHASE  
WAS DIRECTED TO THE TESTING OF MATERIALS. THE  
DEVELOPMENT OF FABRICATION TECHNIQUES AND THE  
FABRICATION OF TWO PROTOTYPE SYSTEMS FOR DESIGN  
VERIFICATION TESTING. THE SECOND PHASE OF THE  
PROGRAM INVOLVED THE MODIFICATION OF PATTERNS, AND  
THE FABRICATION OF 34 AIR DISTRIBUTION SYSTEMS ON A  
MODIFIED PRODUCTION BASIS. THE COUNTER-FLOW SYSTEM  
OF DISTRIBUTION VENTILATING AND/OR CONDITIONED AIR  
FOR PROTECTIVE CLOTHING CAN BE MANUFACTURED UNDER  
STANDARD PRODUCTION METHODS, USING COMMERCIALY  
AVAILABLE MATERIALS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-666 940 6/16 22/1  
LITTLE (ARTHUR D) INC CAMBRIDGE MASS

TECHNIQUES AND MATERIALS FOR PASSIVE THERMAL CONTROL  
OF RIGID AND FLEXIBLE EXTRAVEHICULAR SPACE  
ENCLOSURES. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 66-MAY 67.  
DEC 67 113P RICHARDSON, DAVID L. I  
CONTRACT: AF 33(615)-3533  
PROJ: AF-7164  
TASK: 716412  
MONITOR: AMRL TR-67-128

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*EXTRAVEHICULAR  
ACTIVITY), (\*TEMPERATURE CONTROL, PRESSURE SUITS),  
PERFORMANCE(HUMAN), PASSIVE SYSTEMS, THERMAL INSULATION,  
COOLING, UNDERWEAR, HEAT TRANSFER, WORK FUNCTIONS,  
VENTING, THERMAL ANALYSIS, MATHEMATICAL ANALYSIS,  
CONTROL SYSTEMS (U)

THE RESULTS OF THE ANALYSIS INDICATE THAT WHEN AN  
ASTRONAUT IN A FLEXIBLE ENCLOSURE (SOFT SPACE  
SUIT) WORKS ON THE SURFACE OF A LARGE SPACECRAFT,  
THE TEMPERATURES ON HIS EXTERNAL SURFACE ARE MARKEDLY  
INCREASED OVER THOSE WHICH OCCUR WHEN HE IS NOT NEAR  
THE SPACECRAFT. MOREOVER, PASSIVE THERMAL CONTROL  
OF THE ASTRONAUT IS NOT POSSIBLE WHEN HE IS NEAR THE  
SPACECRAFT. THE TECHNIQUES INVESTIGATED FOR  
THERMALLY COUPLING AN ASTRONAUT WITH HIS THERMAL  
CONTROL SYSTEM INCLUDE LIQUID COOLED UNDERGARMENTS,  
GAS COOLING, AND HEAT TRANSFER TO THE COOLED WALLS OF  
HIS ENCLOSURE. TECHNIQUES WERE INVESTIGATED FOR  
INCREASING THE CONDUCTANCE THROUGH SOFT SPACE SUIT  
INSULATIONS BY COMPRESSING THE INSULATION. THE  
INSULATION OF A CYLINDRICAL SECTION OF A SPACE SUIT  
ARM WAS MEASURED UNDER BOTH COMPRESSED CONDITIONS  
(3.7 PSIA) AND UNCOMPRESSED CONDITIONS IN  
SIMULATED NOON AND EARTH-UMBRA ORBIT-POSITIONS.  
THE RANGE OF CONDUCTANCE INCREASED FROM 0.26 BTU/  
SQ FT-HR DEGREE F UNCOMPRESSED TO 0.81 BTU/SQ  
FT-HR DEGREE F COMPRESSED. MEASUREMENTS WERE  
MADE IN SIMULATED NOON AND EARTH-UMBRA ORBIT  
POSITIONS OF THE THERMAL HEAT DISSIPATING CAPABILITY  
OF A LOUVER SYSTEM WHICH WAS DESIGNED FOR OPERATION  
IN THE SUN. A 6-INCH SQUARE MODEL HAD A NET HEAT  
FLOW FROM THE LOUVERS FOR THE FOUR ORBIT CONDITIONS  
TESTED (OPEN AND CLOSED IN THE SUN AND IN THE  
SHADE). THE LOUVER OPERATION CONTROLS MAINTAINED (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-667 718 6/17 11/5  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE CREW  
EQUIPMENT DEPT

FLEET EVALUATION - COVERALLS, FLYING, SUMMER, FIRE  
RESISTANT, POLYAMIDE, TYPE CS-FRP-1. (U)

DESCRIPTIVE NOTE: PHASE REPT.,  
APR 68 18P DESIMONE, DAVID N. I  
REPT. NO. NADC-AC-6809

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, ACCEPTABILITY), (\*FIRE  
RESISTANT TEXTILES, FLIGHT CLOTHING), LAUNDRY  
OPERATIONS, WEAR RESISTANCE, COLORS, WEIGHT, NYLON,  
MILITARY REQUIREMENTS, DESIGN, QUESTIONNAIRES (U)  
IDENTIFIERS: SUMMER (U)

A FIELD EVALUATION WAS CONDUCTED IN ACCORDANCE WITH  
REFERENCE (A) ON THE SUBJECT COVERALL TO OBTAIN  
INFORMATION REGARDING THE ACCEPTABILITY OF FIRST  
PRODUCTION LOTS. ONE THOUSAND QUESTIONNAIRES WERE  
DISTRIBUTED TO THE FLEET AND 621 WERE RETURNED TO  
THE AEROSPACE CREW EQUIPMENT DEPARTMENT  
REPRESENTING A CROSS SECTION OF VARIOUS ACTIVITIES.  
COVERALL DESIGN WAS FOUND ACCEPTABLE FOR FLEET  
USE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-668 139 6/17 1/3  
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS  
LAB

AIRCREW COOLING STUDY.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,  
JAN 68 180P JURGENS, P. 1  
REPT. NO: APL-TG-945  
CONTRACT: NOW-62-0604

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CREWS, COOLING), (\*PROTECTIVE  
CLOTHING, FLIGHT CREWS), NAVAL PERSONNEL, AIRCRAFT  
EQUIPMENT, THERMAL INSULATION, AIR COOLED, LIQUID  
COOLED, MOISTURE, TOLERANCES (PHYSIOLOGY), METABOLISM,  
ENVIRONMENT, HEAT TRANSFER (U)

THE NAVAL AVIATOR CANNOT WEAR SEPARATE GARMENTS FOR  
THE WIDE VARIETY OF THERMAL ENVIRONMENTS IN WHICH HE  
MUST WORK. THE RESULTS OF A STUDY CONDUCTED TO  
ASCERTAIN THE THERMAL CONTROL REQUIREMENTS OF THESE  
AIRCREW MEN ARE PRESENTED. THE STUDY SET OUT TO  
DEFINE THE HEAT AND MOISTURE REMOVAL REQUIREMENTS  
DURING GROUND AND FLIGHT OPERATIONS, TO LEARN THE  
EFFECTS OF VARIOUS CLOTHING COMBINATIONS, AND TO  
LEARN THE EFFECTS OF FLIGHT CONDITIONS ON THERMAL  
MOISTURE CONTROL. THE EFFECTS OF BOTH METABOLIC  
ACTIVITY AND ENVIRONMENT ON BODY TEMPERATURE ARE  
CONSIDERED, AND VARIOUS TECHNIQUES OF AIR AND LIQUID  
COOLING IN A VARIETY OF GARMENTS ARE THEN REVIEWED IN  
ORDER TO DETERMINE THE MOST EFFECTIVE WAYS OF KEEPING  
BODY TEMPERATURES AT REASONABLE LEVELS. IMMEDIATE  
USE OF FORCED-AIR COOLING SUITS, MORE PRECISE  
DETERMINATION OF THE LIMITS OF 'TOLERABLE' WORKING  
CONDITIONS, AND FURTHER IMPROVEMENTS IN THE DESIGN OF  
LIQUID-COOLED GARMENTS ARE RECOMMENDED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-668 765 6/17 13/1  
NORTHROP CORPORATE LABS HAWTHORNE CALIF

VARIABLE THERMAL CONDUCTIVITY HEAT TRANSFER RESEARCH  
FOR PERSONAL PROTECTIVE ASSEMBLIES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 66-31 AUG 67,  
DEC 67 52P OLSON, ROBERT B. IFELDER,  
JOHN W. ILOMBARD, CHARLES F. I  
REPT. NO. NCL-67-36R  
CONTRACT: AF 33(615)-5109  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-67-190

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, COOLING), HEAT  
PRODUCTION(BIOLOGY), THERMAL CONDUCTIVITY, HEAT FLUX,  
ISOCYANATE PLASTICS, EXPANDED PLASTICS, TEMPERATURE  
CONTROL, POROUS METALS, EXTRAVEHICULAR ACTIVITY,  
FEASIBILITY STUDIES, PERFORMANCE(ENGINEERING) (U)

IN THIS PROGRAM A FEASIBILITY STUDY WAS CONDUCTED  
OF A CONDUCTIVE COOLING SYSTEM FOR COOLING A MAN IN  
SPACE. IN THE CONCEPT STUDIED THE COOLING WAS  
PROVIDED BY A POROUS PLATE SUBLIMATOR AND CONTROLLED  
BY A VARIABLE THERMAL CONDUCTANCE LAYER. THE  
RESULTS OF THE TESTS PERFORMED DEMONSTRATE THE NEED  
FOR ADVANCES IN TECHNOLOGY AND FURTHER DEVELOPMENT  
WORK TO MAKE THIS CONCEPT FEASIBLE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-668 809 6/17 6/7  
NAVAL SUBMARINE MEDICAL CENTER GROTON CONN SUBMARINE  
MEDICAL RESEARCH LAB

PHYSIOLOGICAL EVALUATION OF THE BRITISH MARK VII  
SUBMARINE ESCAPE IMMERSION SUIT DURING IMMERSION. (U)

MAR 68 28P HALL, DAVID A. INOBEL, JOEL  
J. ISANTA MARIA, LOUIS J. I  
REPT. NO. SMRL-514  
PROJ: NAVMED-MF022.03.03-9027  
TASK: MF022.03.03-9027.03

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING,  
PERFORMANCE(ENGINEERING)), (\*SUBMARINE ESCAPE,  
UNDERWATER CLOTHING), SUBMARINE PERSONNEL,  
SURVIVAL(PERSONNEL), COLD WEATHER TESTS,  
EXPOSURE(PHYSIOLOGY), HANDS, FEET, MORTALITY RATES, TIME  
STUDIES, CORRELATION TECHNIQUES, THEORY,  
ELECTROCARDIOGRAPHY, PREDICTIONS, DAMAGE ASSESSMENT,  
STRESS(PHYSIOLOGY), GREAT BRITAIN (U)  
IDENTIFIERS: \*SUBMARINE ESCAPE IMMERSION SUITS (U)

THIS STUDY DETERMINES THE GENERAL PERFORMANCE AND  
SURVIVAL TIME AFFORDED BY THE BRITISH MARK VII  
SUBMARINE ESCAPE IMMERSION SUIT (SEIS), IN  
29 DEGREES F. WATER, 10 DEGREES F. AIR, AND 20  
MPH WIND SPEED. IT WAS FOUND THAT THE BRITISH  
SUIT DID NOT PROVIDE THE 24-HOUR ESTIMATED SURVIVAL  
TIME AT THE SEVERE CONDITIONS LISTED ABOVE, AND THE  
FOUR SUBJECTS WERE TAKEN FROM THE WATER AFTER AN  
AVERAGE TIME OF 2.8 HOURS OF EXPOSURE. DAMAGE TO  
THE HANDS AND FEET WOULD PROBABLY OCCUR BETWEEN 5.1  
AND 9.1 HOURS. DEATH WOULD PROBABLY OCCUR AFTER  
5.6 TO 24 HOURS OF EXPOSURE. TESTS WERE ALSO  
CONDUCTED IN 90 DEGREES F. WATER AND 85 DEGREES  
F., IN STILL AIR. THESE TESTS INDICATED THAT NO  
MAJOR PROBLEM WILL BE ENCOUNTERED UNDER THESE  
CONDITIONS. THE ENVIRONMENTAL CONDITIONS WERE THEN  
CHANGED IN A STEP-WISE FASHION FROM 29 DEGREES F.  
WATER, 10 DEGREES F. AIR, AND 20 MPH WIND, UNTIL  
24-HOUR ESTIMATED SURVIVAL TIME WAS OBTAINED. AT  
44 DEGREES F. WATER, 32 DEGREES F. AIR, AND 20  
MPH WIND, 24-HOUR SURVIVAL MAY BE PREDICTED FOR  
MOST MEN, BASED ON RESULTS IN THE LIMITED NUMBER OF  
SUBJECTS USED IN THIS INVESTIGATION. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-640 840 6/11 6/17 6/7  
LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY  
DIV

AEROSPACE LIFE SUPPORT SYSTEMS AND CREW PROTECTIVE  
EQUIPMENT. (U)

APR 68 62P PYLE, D. I. ANDROVSKY, B. I  
REPT. NO. ATD-68-6-22-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SURVEYS OF FOREIGN SCIENTIFIC AND  
TECHNICAL LITERATURE.

DESCRIPTORS: (\*LIFE SUPPORT, REVIEWS), (\*FLIGHT  
CLOTHING, REVIEWS), (\*SEA RESCUE EQUIPMENT, REVIEWS),  
CONFINED ENVIRONMENTS, PRESSURE SUITS, PERIODIC  
VARIATIONS, SURVIVAL KITS, LIFE PRESERVERS, LIFE RAFTS,  
PRESSURE SUITS, CLOSED ECOLOGICAL SYSTEMS, CONTROLLED  
ATMOSPHERES, CHLORELLA, NUTRITION, SPACE BIOLOGY,  
RADIATION EFFECTS, METABOLISM, MANNED SPACECRAFT,  
ABSTRACTS, USSR (U)

THE FIRST PART OF THIS REPORT, DEALING WITH HIGH-  
ALTITUDE CREW PROTECTION, IS BASED ALMOST ENTIRELY ON  
A DETAILED REVIEW OF SELECTED PORTIONS OF A MONOGRAPH  
BY S. P. UMANSKIY ENTITLED, PILOT AND  
COSMONAUT EQUIPMENT. IT CONTAINS A SECTION ON  
FLIGHT CLOTHING SUITABLE FOR VARIOUS SEASONS OF THE  
YEAR, GLOVES AND FOOT GEAR, HELMET LINERS, VENTILATED  
SUITS, ANTI-G SUITS, AND SURVIVAL EQUIPMENT (SEA  
SURVIVAL GEAR, SURVIVAL SUITS, LIFE JACKETS, LIFE  
RAFTS, AND AN EMERGENCY SURVIVAL PACK). IN  
ADDITION, THE FIRST PART OF THIS REPORT CONTAINS A  
BRIEF GLOSSARY OF ABBREVIATIONS USED IN SOVIET  
AIRCRAFT EQUIPMENT DESIGNATIONS AND A BRIEF COMMENTARY  
ON THE HANDBOOK ON ASTRONAUTICS BY N. YA.  
KONDRAT'YEV AND V. A. ODINTSOV. THE SECOND  
PART OF THIS REPORT CONTAINS 30 ABSTRACTS RELATED TO  
SPACECRAFT LIFE-SUPPORT SYSTEMS. THEY DEAL LARGELY  
WITH RECENT DEVELOPMENTS IN SOVIET CHLORELLA  
RESEARCH WHICH ARE DIRECTLY APPLICABLE TO THE USE OF  
CHLORELLA FOR REGENERATION OF SPACECRAFT CABIN AIR  
AND TO THE POSSIBLE USE OF ALGAE AS A SOURCE OF FOOD  
FOR COSMONAUTS ON EXTENDED SPACEFLIGHTS.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-669 230 6/7 6/17  
COAST GUARD BALTIMORE MD FIELD TESTING AND DEVELOPMENT  
CENTER

EVALUATION OF ONE PIECE WET SUIT.

(U)

DESCRIPTIVE NOTE: TEST REPT.:

MAY 68 44p CUTHRELL, C. BUZHARDT, R.

E. I

REPT. NO. 481

PROJ: CG-3986/01/01

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, BUOYANCY),  
(\*EXPOSURE SUITS, ACCEPTABILITY),  
PERFORMANCE(ENGINEERING), FLIGHT CLOTHING, LIFE  
PRESERVERS, SYNTHETIC RUBBER, EFFECTIVENESS,  
SURVIVAL(PERSONNEL), FASTENINGS, PHOTOGRAPHS, TEST  
METHODS

(U)

THE REPORT COVERS THE EVALUATION OF THE FLOTATION  
CAPABILITIES OF THE TWO-PIECE WET SUIT BEING USED AS  
SURVIVAL EQUIPMENT BY COAST GUARD PERSONNEL, A  
ONE-PIECE WET SUIT AND AN ANTI-EXPOSURE MILITARY  
FLIGHT SUIT. IN ADDITION, THE WET SUITS AND THE  
ANTI-EXPOSURE SUIT WERE EVALUATED WHILE WEARING  
SUPPLEMENTAL FLOTATION, FOUND NECESSARY FOR SELF-  
RIGHTING CAPABILITY. THE REPORT DESCRIBES THE  
TESTS CONDUCTED AND RESULTS OBTAINED. THE REPORT  
ALSO DESCRIBES ADDITIONAL TESTS CONDUCTED TO  
DETERMINE IF A DOWNED PILOT COULD ZIP CLOSED THE ONE-  
PIECE NEOPRENE WET SUIT IN THE WATER.

(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-670 212 18/2 6/7 6/17 20/13  
SANDERS NUCLEAR CORP NASHUA N H

FEASIBILITY STUDY AND CONCEPTUAL DESIGN FOR A  
PERSONAL THERMAL CONDITIONING SYSTEM.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. AUG-DEC 67,  
DEC 67 327P SULLIVAN, J. J. DISCOIN.

R. IWONG, A. I

CONTRACT: F41609-67-C-0096

PROJ: AF-6770

MONITOR: AMD TR-68-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, RADIOACTIVE  
ISOTOPES), (\*RADIOACTIVE ISOTOPES, HEAT TRANSFER),  
(\*SURVIVAL KITS, ARCTIC REGIONS), PILOTS, FEASIBILITY  
STUDIES, EJECTION SEATS, TERRAIN, SEA RESCUES, RADIATION  
TOLERANCE, HEAT, AIRCRAFT CABINS, THERMAL INSULATION,  
REFRIGERATION SYSTEMS, COOLING, DESIGN (U)

AN AIRMAN FORCED TO EJECT OVER ARCTIC TERRAIN OR  
COLD WATER IS FACED WITH A VERY BRIEF SURVIVAL PERIOD  
AFTER LANDING. (APPROXIMATELY THREE MINUTES IN  
28F WATER.) THIS PERIOD OF TIME IS INSUFFICIENT  
TO INITIATE AND ACCOMPLISH A SUCCESSFUL RESCUE  
MISSION. A STUDY HAS BEEN MADE TO DETERMINE THE  
FEASIBILITY OF EXTENDING THE SURVIVAL PERIOD BY  
WARMING THE AIRMAN WITH HEAT GENERATED BY A  
RADIOISOTOPE. A CONCEPTUAL DESIGN HAS BEEN CREATED  
CONSISTING OF A NETWORK OF WATER FILLED TUBES WORN  
BENEATH AN INSULATED SUIT. WATER IN THE TUBES IS  
HEATED BY A 500 WATT RADIOISOTOPE TO WARM THE PILOT  
DURING A SURVIVAL SITUATION (28F WATER OR -65F  
AIR), AND IS COOLED BY AN 825 WATT REFRIGERATOR TO  
KEEP THE AIRMAN COMFORTABLE WHILE FLYING THE AIRCRAFT  
WITH CABIN TEMPERATURES UP TO 120F. A THERMO-  
ELECTRIC POWER GENERATOR SUPPLIES 12 WATTS OF POWER  
FOR THE WATER PUMP. COMPARISON STUDIES OF SEVERAL  
RADIOISOTOPES HAVE BEEN MADE. SYSTEM CALCULATIONS  
AND COMPONENT CALCULATIONS SHOW THAT THE CONCEPT IS  
FEASIBLE AND PRACTICABLE FOR EXTENDING THE SURVIVAL  
PERIOD INDEFINITELY. THE SURVIVAL SYSTEM WEIGHT IS  
ESTIMATED AT 80 POUNDS AND IS CONFIGURED TO FIT IN A  
USAF STANDARD EJECTION SEAT KIT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-671 681 6/17  
RHODE ISLAND UNIV KINGSTON

FLOW OF HEAT AND VAPOR THROUGH COMPOSITE PERM-  
SELECTIVE MEMBRANES UNDER SIMULATED CONDITIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 67-JAN 68,  
JAN 68 38P VOTTA, FERDINAND, JR;  
CONTRACT: DAAG17-67-C-0061  
PROJ: DA-1J025601A032  
MONITOR: USA-NLABS, C/OM TR-68-44-CM, 45

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*TEMPERATURE  
CONTROL), HEAT TRANSFER, MASS TRANSFER, COMPOSITE  
MATERIALS, EVAPORATION, SKIN (ANATOMY), MEMBRANES,  
ENVIRONMENTAL TESTS, COOLING, SURFACE TEMPERATURE,  
SIMULATION, VAPORIZATION, PERMEABILITY (U)

AN EXPERIMENTAL STUDY WAS MADE OF THE HEAT AND MASS  
(WATER VAPOR) FLOW RATE THROUGH SEVERAL DIFFERENT  
COMPOSITE CLOTHING SYSTEMS. COOLING OF A SIMULATED  
SKIN SURFACE WAS OBTAINED THROUGH VAPORIZATION OF  
WATER FROM A WET WICK IN THE CLOTHING SYSTEM.  
TESTS WERE CONDUCTED AT BOTH REDUCED AND AT  
ATMOSPHERIC PRESSURE. IN THE REDUCED PRESSURE  
TESTS, COOLING RATES AS HIGH AS 182 BTU/(HR. X  
SQ. FT.) WERE OBTAINED WITH A SIMULATED SKIN  
TEMPERATURE OF 91F. EXCELLENT CONTROL OF THE  
SIMULATED SKIN TEMPERATURE AT WIDELY VARYING HEAT  
FLOW RATES WAS POSSIBLE. TEMPERATURE CONTROL WAS  
OBTAINED BY CONTROLLING THE WICK VAPORIZATION  
PRESSURE. BOTH FORCED AND NATURAL CONVECTION WERE  
USED IN THE ATMOSPHERIC PRESSURE TESTS. FORCED  
CONVECTION WAS OBTAINED BY BLOWING AIR FROM A LARGE  
FAN ACROSS THE SURFACE OF THE CLOTHING SYSTEMS.  
THE AIR VELOCITY WAS APPROXIMATELY 7 FT./SEC.  
WHILE THE HEAT FLOW RATE DEPENDED SOMEWHAT UPON THE  
TEMPERATURE AND THE HUMIDITY OF THE ROOM AIR, WHICH  
WERE NOT CONTROLLED IN THESE TESTS, THE RESULTS  
INDICATED THAT HIGH COOLING RATES WERE POSSIBLE.  
FOR A SIMULATED SKIN TEMPERATURE OF 91F, COOLING  
RATES AS HIGH AS 200 BTU/(HR. X SQ. FT.) FOR  
FORCED CONVECTION AND 121 BTU/(HR. X SQ. FT.)  
FOR NATURAL CONVECTION WERE OBTAINED, WITH ROOM  
AIR. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-672 876 6/16 15/5  
ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK  
MASS

A METHOD OF RELATING PHYSIOLOGY AND MILITARY  
PERFORMANCE: A STUDY OF SOME EFFECTS OF VAPOR BARRIER  
CLOTHING IN A HOT CLIMATE. (U)

68 14P JOY, ROBERT J. T. ; GOLDMAN,  
RALPH F. ;

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN MILITARY MEDICINE, V133 N6  
P458-470 JUN 68.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, BIOLOGICAL WARFARE),  
HEAT TOLERANCE, MILITARY PERSONNEL, MALES,  
ACCLIMATIZATION, GROUP DYNAMICS, PHYSICAL FITNESS,  
MILITARY REQUIREMENTS, PERFORMANCE(HUMAN), PROTECTIVE  
MASKS, PHYSIOLOGY, UNDERWEAR, CANNULATION, WEATHER,  
GEOGRAPHY (U)  
IDENTIFIERS: RECTAL TEMPERATURE, SUMMER (U)

IT IS OUR INTENT TO SUGGEST AN EXPERIMENTAL DESIGN  
WHICH WILL RELATE PHYSIOLOGICAL MEASUREMENTS TO  
INDIVIDUAL AND UNIT PERFORMANCE DURING MILITARY  
TASKS. IT MAY BE SUMMARIZED AS (A) THE SELECTION  
OF PHYSIOLOGICAL VARIABLES WHICH CAN BE DEMONSTRATED  
TO BE CLOSELY RELATED TO CLINICAL OR SUBCLINICAL  
CASUALTY PRODUCTION AND, (B) TEMPORALLY RELATING  
THESE TO THE OCCURRENCE OF INDIVIDUAL INEFFECTIVENESS  
IN TERMS OF JOB, UNIT PROGRESS, UNIT MISSION, AND  
ENVIRONMENTAL VARIABLES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. /ZOM08

AD-673 345            14/2            6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

APPLICATION OF THE RANQUE-HILSCH VORTEX TUBE TO  
AIRCREW COOLING PROBLEMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FEB-MAY 67,  
JUN 68 19P            VAN PATIEN, ROBERT E. I  
GAUDIO, RALPH, JR;  
REPT. NO. AMRL-TR-67-124  
PROJ: AF-7222

UNCLASSIFIED REPORT

DESCRIPTORS: (HILSCH TUBES, PROTECTIVE CLOTHING),  
COOLING, FLIGHT CREWS, ACCEPTABILITY, BLOOD CHEMISTRY,  
PULSE RATE, RESPIRATION, PERSPIRATION, HEAT TOLERANCE,  
URINE, REVIEWS, HISTORY, OPERATION, MECHANICAL DRAWINGS,  
RAILROADS, MINING ENGINEERING, USSR, THERMOSTATS (U)

THE RANQUE-HILSCH VORTEX TUBE, A DEVICE WITH NO  
MOVING PARTS, PRODUCES SIGNIFICANT REFRIGERATION  
EFFECT WHEN DRIVEN BY COMPRESSED AIR. THIS REPORT  
DISSEMINATES UP-TO-DATE INFORMATION ON THE  
PERFORMANCE OF CURRENT VORTEX TUBES, REPORTS THE  
RESULTS OF AN AIRCREW COOLING EXPERIMENT USING THE  
DEVICE, AND SUGGESTS OTHER USES OF POTENTIAL INTEREST  
TO THE AIR FORCE. THE HISTORY OF THE VORTEX  
TUBE AND ITS BASIC THEORY ARE PRESENTED BRIEFLY.  
(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-674 184 6/17 5/5 5/9  
ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA

USFR EVALUATIONS OF TWO AIRCREW PROTECTIVE HELMETS: (U)

AUG 68 37P BYNUM, JAMES A. I  
REPT. NO. USAARU-69-1  
PROJ: DA-3AO-2560-1A819  
TASK: 3AO-2560-1A819-036

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CREWS, PROTECTIVE CLOTHING),  
(\*HELMETS, PERFORMANCE(ENGINEERING)), HUMAN FACTORS  
ENGINEERING, JET PLANE NOISE, ATTENUATION, EXPERIMENTAL  
DESIGN, ANALYSIS OF VARIANCE, PROTECTION, DESIGN,  
WEIGHT, ACCEPTABILITY, DECISION MAKING, VOICE  
COMMUNICATIONS (U)  
IDENTIFIERS: EVALUATION (U)

TWO AIRCREW PROTECTIVE HELMETS WERE EVALUATED BY 24  
INSTRUCTOR PILOTS WHO WERE DIVIDED EQUALLY INTO  
GROUPS SUBJECTED TO THREE AMBIENT NOISE ENVIRONMENTS.  
PILOTS RATED THE ARMY APH-5 AND THE SPH-3X  
(EXPERIMENTAL) ON EIGHT CATEGORIES DESIGNED TO  
ASSESS RELATIVE COMFORT, ACCEPTABILITY, AND NOISE  
ATTENUATION. RATINGS WERE COMPARED, USING A  
SPLIT-PLOT FACTORIAL ANALYSIS OF VARIANCE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-676 885 6/14 20/1  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA

MANIKIN MEASUREMENTS OF THE NOISE ATTENUATION  
PROVIDED BY FLIGHT HELMETS.

(U)

AUG 68 22P FORSTALL, JOHN R. I  
REPT. NO. NAHI-1049  
PROJ: MF-12.524.005-5020.1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ANTHROPOMETRY, NOISE),  
MODELS(SIMULATIONS), EAR PROTECTORS, EAR, SOUND  
TRANSMISSION, ACOUSTIC PROPERTIES, AIRCRAFT NOISE,  
ATTENUATION  
IDENTIFIERS: \*FLIGHT CLOTHING, \*HELMETS

(U)  
(U)

MEASUREMENTS OF THE NOISE ATTENUATION PROVIDED BY  
FIVE FLIGHT HELMETS WERE OBTAINED ON A MANIKIN HEAD  
AND COMPARED WITH ATTENUATION MEASUREMENTS OBTAINED  
ON HUMAN SUBJECTS ACCORDING TO THE USASI STANDARD  
FOR EVALUATING REAL-EAR ATTENUATION AT  
THRESHOLD. THE TWO SETS OF MEASUREMENTS WERE  
SIMILAR. THE MANIKIN METHOD HAS CERTAIN ADVANTAGES  
WHICH SHOULD BE CONSIDERED IN TERMS OF THE PARTICULAR  
REQUIREMENTS OF AN EVALUATION PROGRAM: (1) A  
HELMET CAN BE OPTIMALLY FITTED WITH LITTLE  
EXPENDITURE OF TIME; (2) VARIABILITY INTRODUCED  
BY HUMAN FACTORS IS KEPT AT A MINIMUM; (3) HIGH  
LEVELS OF NOISE CAN BE USED AS THE TEST STIMULUS;  
(4) VISUAL AND AUDITORY MONITORING OF THE  
ATTENUATED NOISE PROVIDES THE EXPERIMENTER WITH A  
PRECISE APPRAISAL OF THE FIT AS ADJUSTMENTS ARE MADE;  
(5) MANIKIN MEASUREMENTS ARE PARTICULARLY USEFUL  
IN REVEALING IMPROVEMENTS IN ATTENUATION RESULTING  
FROM MINOR MODIFICATIONS. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-677 118 6/17 11/4  
ROHM AND HAAS CO WARREN R I RHEE DIV

DEVELOPMENT OF A LIGHTWEIGHT BUTYL-COATED STRETCH  
FABRIC. (U)

DESCRIPTIVE NOTE: FINAL REPT. 6 OCT 66-6 APR 68.

APR 68 37P SHELLEY, JAMES P. I

CONTRACT: DAAG17-67-C-0009

PROJ: DA-1-J-025601-A-032

MONITOR: USA-NLABS, C/OM

TR-68-63-CM, 48

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMPOSITE MATERIALS, TEXTILES),  
(\*PROTECTIVE CLOTHING, COMPOSITE MATERIALS), NYLON,  
BUTYL RUBBER, AGING(MATERIALS), IMPREGNATION, PROTECTIVE  
TREATMENTS, THERMAL STABILITY, RUPTURE, TENSILE  
PROPERTIES, DEFECTS(MATERIALS) (U)

THE REPORT DISCUSSES THE DEVELOPMENT OF A TECHNIQUE  
FOR THE APPLICATION OF MULTIPLE THIN LAYERS OF BUTYL  
RUBBER ON A STRETCH NYLON SUBSTRATE. SEVERAL  
VARIATIONS IN THE PROCESS DESIGNED TO MINIMIZE FABRIC  
HANDLING WERE EXPLORED. (AUTHOR: (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-678 375 6/17 11/9 5/9  
NAVAL SUBMARINE MEDICAL CENTER GROTON CONN SUBMARINE  
MEDICAL RESEARCH LAB

THERMAL EVALUATION OF A POLYVINYLCHLORIDE EXPOSURE  
SUIT (EMPRESS) AND COMPARISON WITH PRESENT SUBMARINE  
DECK EXPOSURE SUIT. (U)

MAY 68 28P HALL, DAVID A. INOBEL, JOEL  
J. I  
REPT. NO. SHRL-527  
MONITOR: NAVMED MFO22-03-03-9025-29

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXPOSURE SUITS, \*POLYVINYL CHLORIDE),  
SUBMARINE PERSONNEL, THERMAL INSULATION, EFFECTIVENESS,  
ACCEPTABILITY, THERMAL PROPERTIES (U)  
IDENTIFIERS: EVALUATION (U)

THE STUDY DETERMINED THE GENERAL PERFORMANCE AND  
SURVIVAL TIMES AFFORDED BY THE 'EMPRESS'  
POLYVINYLCHLORIDE EXPOSURE SUIT (PVES) AND THE  
PRESENT SUBMARINE DECK EXPOSURE SUIT IN 44F WATER,  
32F AIR, AND 20 MPH WIND SPEED. TESTS WERE  
ALSO CONDUCTED UTILIZING THE PVES IN 44F WATER,  
20F AIR, AND 20 MPH WIND, WITH: (A) MEN  
STANDING ONE-HALF HOUR IN THE WATER (SIMULATING  
BRIDGE WATCH); (B) MEN STANDING ONE HOUR, OUT  
OF THE WATER, IN 20F AIR, 20 MPH WIND  
(SIMULATING CONNING TOWER WATCH); MEN DRY,  
MOVING ABOUT THE HABITAT. IT WAS FOUND THAT THE  
PVES DID PROVIDE REASONABLE SURVIVAL TIME AT THE  
EXTREME ENVIRONMENTAL CONDITION (44F WATER, 32F  
AIR, 20 MPH WIND) IN ALL SUBJECTS, AND THAT THE  
FOUR SUBJECTS WERE TAKEN FROM THE WATER AFTER AN  
AVERAGE TIME OF 1.8 HOURS OF EXPOSURE. IT WAS  
ESTIMATED THAT DAMAGE TO THE HANDS AND FEET WOULD  
PROBABLY OCCUR BETWEEN 3.4 AND 8.2 HOURS AND DEATH  
WOULD PROBABLY OCCUR BETWEEN 5.4 AND 16.1 HOURS OF  
EXPOSURE. WEARING THE SDOS, THE FOUR SUBJECTS  
WERE TAKEN FROM THE WATER AFTER AN AVERAGE TIME OF  
1.1 HOURS OF EXPOSURE. IT WAS ESTIMATED THAT  
DAMAGE TO THE HANDS AND FEET WOULD PROBABLY OCCUR  
BETWEEN 2.0 AND 4.4 HOURS, WHILE DEATH WOULD REQUIRE  
4.0 TO 7.8 HOURS OF EXPOSURE. TESTS CONDUCTED ON  
THE PVES SIMULATING BRIDGE AND CONNING TOWER  
WATCH CONDITIONS AND ALSO DURING THE DRY EXPERIMENTS  
INDICATED THAT NO DISCOMFORT WOULD BE ENCOUNTERED  
DURING THE NORMAL WATCH-STANDING TIME INTERVAL.  
(AUTHOR)

81

(U)

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-680 165 20/1 6/17  
ARMY NATICK LABS MASS PIONEERING RESEARCH LAB

RESEARCH ON ACOUSTICAL PROBLEMS OF THE MILITARY: A  
REVIEW AND FUTURE ASPECT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 68 40P TANENHOLTZ, STANLEY D. ;  
PROJ: DA-1-0621068121  
TASK: 1-T-062106812102  
MONITOR: USA-NLABS TR-69-44-PR

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ACOUSTICS, PATHOLOGY), (\*PROTECTIVE  
COVERINGS, ARMY RESEARCH), BLAST, VIBRATION, COMBAT  
NOISE, SHOCK(MECHANICS), PHYSIOLOGY, HUMAN FACTORS  
ENGINEERING, ATTENUATION, EAR PROTECTORS, HELMETS,  
PROTECTIVE CLOTHING, STATE-OF-THE-ART REVIEWS,  
MATERIALS, STANDARDS (U)  
IDENTIFIERS: ACOUSTIC RADIATION, GRAPHS(CHARTS) (U)

A REVIEW HAS BEEN MADE OF THE LITERATURE IN THE  
AREA OF ACOUSTICS, VIBRATION, SHOCK, AND BLAST  
PHENOMENA RELATED TO EFFECTS ON THE PHYSIOLOGICAL  
SYSTEM AND ATTENUATION EFFECTS OF MATERIALS AND  
DEVICES. IN ADDITION, INFORMATION FROM SOURCES  
OTHER THAN THE LITERATURE PERTINENT TO AN EVALUATION  
OF THE SIGNIFICANCE OF ACOUSTIC HAZARDS IN THE  
MILITARY ENVIRONMENT, IS ALSO PRESENTED. DAMAGE-  
RISK AND STANDARDS CRITERIA ARE PRESENTED, AND  
FURTHER STUDIES ARE SUGGESTED TO ADVANCE THE STATE-  
OF-THE-ART IN ACOUSTIC HAZARDS PROTECTION AS WELL AS  
TO EXPLOIT THE POTENTIALS OF ACOUSTIC PHENOMENA FOR  
THE INVESTIGATION OF MATERIAL PROPERTIES.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-680 825 4/17 5/5  
APPLIED PSYCHOLOGICAL SERVICES INC WAYNE PA SCIENCE  
CENTER

A PORTABLE TEST BATTERY FOR COMPARATIVELY EVALUATING  
OPERATOR PERFORMANCE IN FULL-PRESSURE SUIT  
ASSEMBLIES. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 67-MAR 68,  
OCT 68 86P SIEGEL, ARTHUR I. ILANTERMAN,  
RICHARD S. I  
CONTRACT: F33615-67-C-1755  
PROJ: AF-7184  
TASK: 718402  
MONITOR: AMRL TR-68-74

UNCLASSIFIED REPORT

DESCRIPTORS: (•PRESSURE SUITS, PERFORMANCE(HUMAN)), TEST  
METHODS, TEST EQUIPMENT, HUMAN FACTORS ENGINEERING, JET  
FIGHTERS, LUNAR CRAFT, MOBILITY, PORTABLE EQUIPMENT,  
TRACKING, PULSE RATE, ANTHROPOMETRY (U)  
IDENTIFIERS: DEXTERITY, EVALUATION, F-111 AIRCRAFT,  
LUNAR EXCURSION MODULES (U)

RECOMMENDATIONS FOR A PORTABLE BATTERY OF TESTS TO  
ASSESS HUMAN MOBILITY IN FULL-PRESSURE SUITS ARE  
PRESENTED. THE LITERATURE WAS REVIEWED TO  
DETERMINE THE TYPES OF INSTRUMENTS AND TESTS EMPLOYED  
BY PRIOR INVESTIGATORS. TASK ANALYSES WERE  
PERFORMED ON THREE ADVANCED VEHICLES TO DETERMINE THE  
BODY MEMBER-MOVEMENT FAMILIES MOST FREQUENTLY  
INVOLVED. A SET OF TESTS AND MEASUREMENTS IS  
SUGGESTED FOR THOSE MEMBER-MOVEMENT FAMILIES FOUND TO  
BE MOST FREQUENTLY INVOLVED IN ADVANCED FLIGHT.  
NECESSARY FUTURE STEPS FOR REALIZING THE PORTABLE  
BATTERY ARE SUGGESTED. THE TEST BATTERY  
RECOMMENDED INCLUDES THE PURDUE PEG BOARD FOR  
FINGER DEXTERITY, A SPECIALLY DESIGNED APPARATUS FOR  
THE STRENGTH OF VARIOUS BODY MOVEMENTS, A SINGLE  
DIMENSION TRACKING TASK FOR VARIOUS COORDINATION  
TESTS, A LEIGHTON FLEXOMETER, AND DIRECT  
MEASUREMENT DEVICES FOR RANGE OF MOVEMENT AND STATIC  
ANTHROPOLOGY MEASUREMENTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-680 826 6/11 22/1 6/17  
HAMILTON STANDARD WINDSOR LOCKS CONN

ENGINEERING DESIGN STUDY OF A SPACE SUIT WITH AN  
INTEGRATED ENVIRONMENTAL CONTROL SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 67-30 JUN 68,  
OCT 68 167P HOWARD, DOUGLAS C. ;  
CONTRACT: F33615-67-C-1946  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-68-122

UNCLASSIFIED REPORT

DESCRIPTORS: (•PRESSURE SUITS, •LIFE SUPPORT),  
CONTROLLED ATMOSPHERES, FEASIBILITY STUDIES, HELMETS,  
OXYGEN EQUIPMENT, PRESSURE, DECONTAMINATION, HUMIDITY,  
THERMAL INSULATION, EXTRAVEHICULAR ACTIVITY, POWER  
SUPPLIES, SAFETY, MANEUVERABILITY, DISPLAY SYSTEMS,  
CONTROL SYSTEMS, OPERATION (U)  
IDENTIFIERS: SELF MANEUVERING UNITS, •SPACE SUITS (U)

CONTINUED SUCCESS IN COPING WITH THE SPACE  
ENVIRONMENT HAS LED TO INCREASED CREWMAN CONFIDENCE  
IN HIS ABILITY TO PERFORM USEFUL WORK DURING  
EXTRATERRESTRIAL MISSIONS. FUTURE MISSIONS WILL  
REQUIRE ADVANCED SUIT/LIFE-SUPPORT-SYSTEM CONCEPTS.  
SUCH A CONCEPT MIGHT LOGICALLY TAKE THE FORM OF A  
SPACE SUIT FOR EXTRAVEHICULAR ACTIVITY WITH AN  
INTEGRATED ENVIRONMENTAL CONTROL SYSTEM. A DESIGN  
STUDY OF THIS CONCEPT HAS BEEN PERFORMED AND DRAWINGS  
PREPARED IN SUFFICIENT DETAIL TO PERMIT FABRICATION  
OF A WORKING MODEL IN A SUITABLY EQUIPPED MODEL SHOP.  
INTEGRATION OF THE ENVIRONMENTAL CONTROL SYSTEM  
WITHIN THE HARD TORSO OF THE SUIT ASSEMBLY RESULTED  
IN A SYSTEM HAVING A PACKAGING DENSITY APPROACHING 80  
PERCENT AND ABLE TO PASS THROUGH A 27 INCH DIAMETER  
HATCH. THE SYSTEM WILL SUPPORT A CREWMAN WORKING  
AT 375 KCAL/HOUR FOR AN INDEFINITE TIME TO A  
RECHARGE IN SPACE CAPABILITY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-681 457 5/5 6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

CLEARANCE AND PERFORMANCE VALUES FOR THE BARE-  
HANDED AND THE PRESSURE-GLOVED OPERATOR.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 68 164P GARRETT, JOHN W. I  
REPT. NO. AMRL-TR-68-24  
PROJ: AF-7184  
TASK: 718408

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, HUMAN FACTORS  
ENGINEERING), (\*GLOVES, PERFORMANCE(HUMAN)),  
OPERATORS(PERSONNEL), ANTHROPOMETRY,  
STRENGTH(PHYSIOLOGY), PERFORMANCE(HUMAN), DESIGN,  
EFFECTIVENESS, AEROSPACE CRAFT, STATISTICAL PROCESSES,  
HANDS, TABLES(DATA) (U)  
IDENTIFIERS: CLEARANCE, DIMENSIONS (U)

THE REPORT SUMMARIZES HAND AND ARM DIMENSIONAL,  
CLEARANCE, AND STRENGTH DATA OF 27 ADULT MALES  
WEARING THE A/P225-2 FULL-PRESSURE SUIT.  
THIRTY-SIX MEASURES WERE OBTAINED UNDER EACH OF  
THREE CONDITIONS: BARE-HANDED; GLOVED AND  
UNPRESSURIZED; AND GLOVED AND PRESSURIZED. THE  
DATA ARE BOTH SUMMARIZED FOR ALL SUBJECTS AND  
REPORTED INDEPENDENTLY BY GLOVE SIZE WORN. USES OF  
THE DATA ARE SUGGESTED AND SPECIFIC DESIGN VALUES  
RECOMMENDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-682 156 6/11 6/17  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

THE OUTFITTING OF THE PILOT AND THE COSMONAUT, (U)

JAN 67 162P UMANSKI, S. P. I  
REPT. NO. FTD-MT-23-1314-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF MONO.  
SNARYAZHENIE LETCHIKA I KOSMONAVTA, MOSCOW, 1967 P1-  
192.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*ASTRONAUTS),  
(\*OXYGEN EQUIPMENT, ASTRONAUTS), (\*PILOTS, \*FLIGHT  
CLOTHING), PRESSURE SUITS, HELMETS, LIFE SUPPORT,  
VENTILATION, SURVIVAL KITS, BREATHING APPARATUS, HIGH  
ALTITUDE, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE BOOK PROVIDES THE NECESSARY INFORMATION ON  
PROTECTIVE FACILITIES (PROTECTIVE CLOTHING, G-  
SUITS, HELMETS, OXYGEN SYSTEMS, AND SPACE SUITS)  
AND OTHER EQUIPMENT THAT IS BEING OR WILL BE EMPLOYED  
ON FLIGHTS INTO THE STRATOSPHERE AND OUTER SPACE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-682 715 6/17  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

MICROCLIMATE-CONTROLLED (THERMALIBRIUM) PROTECTIVE  
CLOTHING SYSTEM FOR MILITARY APPLICATIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 68 29P SPANO, LEO A. I  
REPT. NO: C/P1SEL-60  
PROJ: DA-1-J-062110-A-533  
MONITOR: USA-NLABS TR-68-58-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, DESIGN), MILITARY  
REQUIREMENTS, THERMAL RADIATION, ENVIRONMENT,  
EXPOSURE(PHYSIOLOGY), CHEMICAL WARFARE AGENTS, TOXICITY,  
BIOLOGICAL WARFARE AGENTS, TANKS(COMBAT VEHICLES), ARMY  
AIRCRAFT, PROTECTIVE MASKS, FALLOUT, HEAT, COLD WEATHER  
TESTS, HAZARDS (U)  
IDENTIFIERS: THERMALIBRIUM CLOTHING (U)

THERMALIBRIUM CLOTHING IS A SYSTEM OF HEAT-  
REGULATED PROTECTIVE ENSEMBLES DESIGNED TO PROTECT  
TROOPS EXPOSED TO EXTREME AND/OR TOXIC ENVIRONMENTS.  
THE DESIGN AND FUNCTIONAL CHARACTERISTICS OF THE  
VARIOUS COMPONENTS COMPRISING THERMALIBRIUM SYSTEMS  
ARE DESCRIBED. TYPICAL FUNCTIONAL SYSTEMS FOR USE  
IN U. S. ARMY AIRCRAFT AND TRACKED VEHICLES  
(TANKS), AND IN CHEMICAL AND BIOLOGICAL  
CONTAMINATED ENVIRONMENTS ARE DISCUSSED.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-682 730 15/2 6/11 8/9  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

PROTECTIVE CLOTHING AND LIFE SUPPORT EQUIPMENT FOR  
EXPLOSIVE ORDNANCE DISPOSAL PERSONNEL. (U)

DESCRIPTIVE NOTE: FINAL REPT., NOV 63-NOV 68;  
NOV 68 24P IACONO, VINCENT D. , JR;  
REPT. NO. C/PLSEL-58  
PROJ: DA-1-J-062110-A-533  
MONITOR: USA-NLABS TR-69-48-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*BOMBS, DISPOSAL), (\*CHEMICAL WARFARE  
AGENTS, TECHNICIANS), (\*BIOLOGICAL WARFARE AGENTS,  
\*PROTECTIVE CLOTHING), ARMY PERSONNEL, FEASIBILITY  
STUDIES, LIFE SUPPORT, THERMAL INSULATION, HELMETS,  
SHOES, PROTECTIVE MASK FILTERS, GLOVES, BREATHING  
APPARATUS, VOICE COMMUNICATIONS, DESIGN, HUMAN FACTORS  
ENGINEERING, PERFORMANCE(ENGINEERING) (U)  
IDENTIFIERS: EOD(EXPLOSIVE ORDNANCE DISPOSAL),  
EVALUATION, EXPLOSIVE ORDNANCE DISPOSAL (U)

THE DESIGN AND ENGINEERING OF A SPECIAL PROTECTIVE  
ENSEMBLE FOR PERSONNEL WHO ARE REQUIRED TO DISPOSE OF  
TOXIC MUNITIONS ARE DISCUSSED. THE VARIOUS  
COMPONENTS COMPRISING THE OVERALL SYSTEM AND THEIR  
SPECIFIC PROTECTIVE REQUIREMENTS ARE DESCRIBED.  
PERFORMANCE CHARACTERISTICS OF FUNCTIONAL SYSTEMS  
BUILT TO DATE ARE DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-684 479

6/17

NAVAL MEDICAL RESEARCH INST BETHESDA MD

PHYSIOLOGICAL EVALUATION OF A FREE-FLOODING DIVER  
HEAT REPLACEMENT GARMENT.

(U)

DESCRIPTIVE NOTE: MEDICAL RESEARCH INTERIM REPT.,

FEB 69

18P

BONDI, KENNETH R. ITAUBER,

JOHN F. I

MONITOR: NAVMED

MF12.524.014-1004-17

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIVING, \*PROTECTIVE CLOTHING), UNDERWATER  
CLOTHING, BODY TEMPERATURE, HEAT TRANSFER,  
RESPONSE(BIOLOGY), DESIGN, TEMPERATURE, WATER

(U)

THE GENERAL CAPABILITIES OF A FREE-FLOODING HEAT  
REPLACEMENT GARMENT IN MAINTAINING THERMAL COMFORT IN  
40F WATER, AT BOTH SURFACE AND DEEP DIVING  
CONDITIONS, ARE CONSIDERED. SUIT INLET AND OUTLET  
TEMPERATURE, FLOW RATE, SKIN AND RECTAL TEMPERATURES,  
AND DIVERS' SUBJECTIVE COMFORT LEVEL WERE RECORDED.  
SUIT INLET TEMPERATURES WHICH PRODUCE A SUBJECTIVE  
RESPONSE OF THERMAL COMFORT BY THE DIVER (COMFORT  
ZONE INLET TEMPERATURE) AT VARIOUS FLOW RATES  
ARE PRESENTED FOR SURFACE CONDITIONS AND THROUGH USE  
OF A HEAT BALANCE EQUATION, FOR DEPTH CONDITIONS.  
WHILE THE SUIT IS CONSIDERED INEFFICIENT BECAUSE OF  
ITS HIGH POWER REQUIREMENTS, ESPECIALLY AT DEPTH, ITS  
WEARABILITY AND MODE OF HEAT TRANSFER MAKE IT AN  
EXCELLENT HEAT REPLACEMENT GARMENT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-684 582 6/17  
KANSAS STATE UNIV MANHATTAN DEPT OF INDUSTRIAL  
ENGINEERING

A COOLING HOOD IN HOT-HUMID ENVIRONMENTS. (U)

DESCRIPTIVE NOTE: SPECIAL REPT.,  
JAN 69 39P KONZ,STEPHAN A. INENTWICH,  
H. FRITZ ;  
REPT. NO: THEMIS-SR-81  
CONTRACT: F44620-68-C-0020  
PROJ: AF-7921  
TASK: 792108  
MONITOR: AFOSR 69-0574TR

UNCLASSIFIED REPORT

DESCRIPTORS: (•COOLING, HUMANS), (•PROTECTIVE CLOTHING,  
COOLING), BODY TEMPERATURE, SKIN(ANATOMY), HEAT  
TOLERANCE, CONDUCTION(HEAT TRANSFER), LIQUID COOLED,  
STRESS(PHYSIOLOGY), SWEAT GLANDS, HUMIDITY,  
ENVIRONMENT (U)

THIS PAPER DESCRIBES COOLING MAN WITH CONDUCTION;  
SPECIFICALLY, COOL WATER IN TUBES OF A HOOD ON THE  
HEAD. THE RESULTS CAN BE SUMMARIZED AS FOLLOWS:  
HEAD TEMPERATURE WAS KPPT CONSIDERABLY LOWER AND  
SKIN AND RECTAL TEMPERATURES WERE KEPT LOWER; CARDIAC  
COST WAS REDUCED; SWEATING WAS AT APPROXIMATELY 40%  
OF THE RATE WITHOUT THE HOOD, AND PERMITTED EXPOSURE  
TIME TO HEAT STRESS WAS LONGER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-695 720 6/17  
AFROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

PRINCIPLES OF THE BOYLE'S LAW EMERGENCY PRESSURE  
SUITS AND THEIR APPLICATION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 68 31P SCHUELLER, OTTO ;  
REPT. NO. AMRL-TR-67-234  
PROJ: AF-7164  
TASK: 716411

UNCLASSIFIED REPORT

DESCRIPTORS: (•PRESSURE SUITS, DESIGN); OXYGEN;  
PERMEABILITY, FIRE SAFETY, GASES, HAZARDS, PROTECTION,  
RESPIRATION, DESIGN, GAS CYLINDERS, HIGH ALTITUDE (U)

AN URGENT REQUIREMENT EXISTS FOR A SIMPLE, RELIABLE  
EMERGENCY PRESSURE SUIT, PERMEABLE TO AIR AND  
COMFORTABLE WHILE UNPRESSURIZED, THE CONDITION IN  
WHICH THE PRESSURE SUIT IS WORN MOST OF THE TIME.  
THE BOYLE'S LAW SUIT MEETS THESE ESSENTIAL  
REQUIREMENTS. IT USES THE EXPANSION OF GAS SEALED  
IN MULTIPLE TUBES FOR PRODUCING MECHANICAL  
COUNTERPRESSURE ON THE SKIN. OXYGEN IS USED IN THE  
MASK OR HELMET ONLY FOR BREATHING, THUS REDUCING  
VULNERABILITY AND FIRE HAZARD TO A MINIMUM. THIS  
REPORT ANALYZES THE PHYSICAL AND TECHNICAL PRINCIPLES  
OF THE BOYLE'S LAW SUIT AND THEIR PRACTICAL  
APPLICATION TOWARD IMPROVING DESIGN OF THE TUBE  
SYSTEM, MINIMIZING BULK, TUBE CHARGING PROCEDURES,  
AND SIZING AND ADJUSTMENT POSSIBILITIES. FINALLY,  
RECOMMENDATIONS FOR REDESIGNING THE OXYGEN REGULATOR  
TO MINIMIZE BREATHING EFFORT ARE GIVEN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-686 1167 6/2 9/6 6/19  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

DESCRIPTION AND OPERATING INSTRUCTIONS FOR A 7-  
CHANNEL TELEMETRY SYSTEM FOR PHYSIOLOGICAL  
TEMPERATURES AND THE ELECTROCARDIOGRAM. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JAN-1 JUL 66,  
OCT 68 24p RATINO, DAVID A. IMARKO,  
ADOLPH R. KAUFMAN, WILLIAM C. I  
REPT. NO. AMRL-TR-68-140  
PROJ: AF-7222  
TASK: 722206

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TELEMETER SYSTEMS, PRESSURE SUITS),  
MULTIPLEXING, PULSE DURATION MODULATION, TELEMETERING  
DATA, BODY TEMPERATURE, ELECTROCARDIOGRAPHY, THERMAL  
INSULATION, ACCEPTABILITY, AEROSPACE MEDICINE,  
INSTRUCTION MANUALS (U)  
IDENTIFIERS: \*BIOTELEMETRY (U)

PREVIOUS TELEMETRY DESIGNS WERE IMPROVED TO PRODUCE  
A SYSTEM SPECIFIC TO THE PHYSIOLOGICAL EVALUATION OF  
THE THERMAL ADEQUACY OF SPACE SUITS. A SMALL  
SEVEN-CHANNEL PULSE DURATION MULTIPLEXED TELEMETRY  
SYSTEM WHICH TRANSMITS AN ELECTROCARDIOGRAM, RECTAL  
TEMPERATURE WITH AN ACCURACY BETTER THAN + OR -  
0.05C, AND FIVE SKIN TEMPERATURES WITH AN ACCURACY  
BETTER THAN + OR - 0.2C WAS CONSTRUCTED. THE  
ENTIRE UNIT IS ENCLOSED IN A 13 BY 10 BY 5 CM BOX  
WORN UNDER THE SPACE SUIT. COMPONENTS THAT HAVE  
BECOME AVAILABLE SINCE CONSTRUCTION COULD REDUCE THIS  
SIZE TO ONE-FIFTH WITHOUT SACRIFICING PERFORMANCE.  
THREE MERCURY BATTERIES (12 V) POWER THE  
EQUIPMENT FOR 40 HOURS AND PROVIDE RELIABLE RECEPTION  
AT DISTANCES OF 90 M. THE SYSTEM IS ACTIVATED BY  
CONNECTING THE SENSOR HARNESS, AND THE OUTPUT IS  
CHECKED AND CALIBRATED BY A 3-POSITION SWITCH. THE  
UNIT HAS BEEN TESTED DURING EXERCISE STUDIES IN SPACE  
SUITS AND DURING METABOLIC EXPERIMENTS ON MEN  
EXERCISING IN COLD ENVIRONMENTS. IT PROVIDED  
RELIABLE TRANSMISSION OF ACCURATE TEMPERATURE AND  
HEART RATE DATA FOR BOTH LABORATORY AND FIELD  
STUDIES. IT HAS SIMPLIFIED EXPERIMENTAL PROCEDURES  
BY ELIMINATING ALL COMPLICATIONS OF HARD WIRE LEADS  
PENETRATING PRESSURE SHELLS IN SPACE SUITS AND BY  
COMPLETELY FREEING THE SUBJECT IN FIELD STUDIES.  
(AUTHOR)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-687 149 6/17 6/5 22/1  
IIT RESEARCH INST CHICAGO ILL

SURVEY OF THERMAL CONTROL TECHNIQUES FOR  
EXTRAVEHICULAR SPACE SUITS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAR 66-1 MAR 68,  
DEC 68 28P HEDGE, JACK C. ;  
REPT. NO: IITRI-J6028-1  
CONTRACT: AF 33(615)-3468  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-68-87

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*THERMAL INSULATION),  
(\*EXTRAVEHICULAR ACTIVITY, PRESSURE SUITS), THERMAL  
PROPERTIES, THERMAL STABILITY, ASTRONAUTS, PROTECTIVE  
CLOTHING, SPACE ENVIRONMENTS, HEAT, TEMPERATURE, SOLAR  
RADIATION, ALBEDO, SPACECRAFT, ORBITS, THERMAL  
CONDUCTIVITY, SURFACE PROPERTIES, MOBILITY, GLOVES,  
TOUCH, DESIGN, METABOLISM, BODY TEMPERATURE, BODY  
FLUIDS, HEAT PRODUCTION(BIOLOGY)

(U)

THERMAL PROTECTION OF THE EXTRAVEHICULAR ASTRONAUT  
WAS STUDIED WITH PARTICULAR ATTENTION TO THE  
RELATIONSHIP BETWEEN THERMAL PROTECTION AND MOBILITY.  
THE SPACE THERMAL ENVIRONMENT WAS REVIEWED WITH  
RESPECT TO THE SOURCES AND MAGNITUDES OF HEAT ENERGY  
DELIVERED TO THE ASTRONAUT. THE ASTRONAUT'S  
THERMAL PHYSIOLOGY WAS INVESTIGATED. THE BASIC  
THERMAL PROCESSES AVAILABLE FOR CONTROLLING THE SPACE  
SUIT TEMPERATURE WERE CONSIDERED AND THE STATE-OF-  
THE-ART OF ACTIVE AND PASSIVE THERMAL CONTROL SYSTEMS  
WAS REVIEWED. THE STUDY CONCLUDES THAT A PASSIVE  
SYSTEM ALONE CANNOT PROVIDE ADEQUATE EXTRAVEHICULAR  
THERMAL PROTECTION. RECOMMENDATIONS ARE MADE FOR  
INVESTIGATING HYBRID THERMAL CONTROL SYSTEMS AND FOR  
STUDYING MEANS TO IMPROVE THE THERMAL PROTECTION OF  
GLOVES WITH ADEQUATE TACTILITY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-687 436 6/17 6/11  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

AN AUTOMATIC ANALOG BREATHING SYSTEM FOR MULTICELL  
PRESSURE SUITS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAR 69 21P SCHUELLER, OTTO ;  
REPT. NO. AMRL-TR-67-235  
PROJ: AF-7164  
TASK: 716411

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*BREATHING APPARATUS),  
(\*OXYGEN EQUIPMENT, DESIGN), HUMAN FACTORS ENGINEERING,  
DECOMPRESSION, AEROSPACE CRAFT, HIGH ALTITUDE,  
SUPERSONIC AIRCRAFT, SIMULATION, EFFECTIVENESS, LIFE  
SUPPORT, AUTOMATIC, CONTROL SYSTEMS (U)

THE DESIGN CRITERIA FOR AN OXYGEN REGULATOR FOR  
MULTICELL PRESSURE SUITS, SUCH AS THE BOYLE'S LAW  
SUIT, ARE ANALYZED. ON THE LATEST MODELS OF THE  
BOYLE'S LAW SUIT THE CONVENTIONAL BREATHING  
BLADDER IN THE THORAX AREA WAS OMITTED TO REDUCE  
VULNERABILITY AND FIRE HAZARD. THE VOLUME CHANGES  
OF THE BODY DURING BREATHING ARE COMPENSATED BY  
EQUIVALENT VOLUME CHANGES OF THE GAS IN THE CLOSED  
CELLS OF THE SUIT. IF A CONVENTIONAL OXYGEN  
REGULATOR IS USED, THE WEARER MUST WORK TO COMPRESS  
THE GAS IN THE CLOSED CELLS. AN OXYGEN REGULATOR  
IS PROPOSED THAT USES THE ENERGY STORED IN COMPRESSED  
OXYGEN TO DO THE NECESSARY COMPRESSION WORK ON THE  
GAS IN THE CLOSED CELLS OF THE SUIT, AND TO RELIEVE  
THE WEARER FROM FATIGUING BREATHING EFFORT. A  
PRESSURE SENSOR IN THE CHEST AREA OR THE SLIGHT  
PRESSURE FLUCTUATIONS DURING BREATHING CAN BE USED TO  
PRODUCE SIMULTANEOUS BREATHING PRESSURE CHANGES  
EQUIVALENT OR APPROXIMATE TO THE GAS PRESSURE CHANGES  
IN THE CLOSED CELLS OR TUBES OF THE SUIT. THIS  
TYPE OF REGULATOR ALSO PERMITS CONSIDERABLE REDUCTION  
OF THE CELL VOLUME AND BULK OF THE SUIT.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-698 057 6/17  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

WORK CLOTHES.

(U)

MAY 69 9P VOSKRESENSKAYA, N. I  
REPT. NO. FSTC-HT-23-787-68  
PROJ: FSTC-92236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF NAUCHNO-TEKHNICKESKIE  
OBSHCHESTVA SSSR. VIO N6 P33-34 1968.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, ENVIRONMENTAL  
TESTS), SPECIFICATIONS, INDUSTRIES, TEXTILES, INDUSTRIAL  
PLANTS, COLD WEATHER TESTS, CLIMATE,  
MODELS(SIMULATIONS), LABOR, DESIGN, ACCEPTABILITY, US(U)  
IDENTIFIERS: TRANSLATIONS (U)

A POPULAR OUTLINE OF WORK DONE BY THE ALL-UNION  
SCIENTIFIC RESEARCH INSTITUTE OF THE SEWING  
INDUSTRY. THIS INSTITUTE PERFORMS COMPREHENSIVE  
TESTING AND FIELD EVALUATION OF ALL TYPES OF WORK  
CLOTHING, INCLUDING PHYSIOLOGICAL TESTS IN TEST  
CHAMBERS TO DETERMINE THE SUITABILITY OF WORK  
CLOTHING FOR THE TYPE OF WORK BEING DONE.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-670 89U 6/19 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

PHYSIOLOGICAL EVALUATION OF EFFECTS ON PERSONNEL  
WEARING THE MICROWAVE PROTECTIVE SUIT AND  
OVERGARMENT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.:  
JUL 69 32P REINS, D. A. WEISS, R. A.  
:

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*HEAT TOLERANCE),  
(\*MICROWAVES, PROTECTIVE CLOTHING), BODY TEMPERATURE,  
VISUAL ACUITY, RESPIRATION, PERSPIRATION, SOLAR  
RADIATION, SURVIVAL(PERSONNEL), OSCILLOGRAPHS,  
CONTROLLED ATMOSPHERES (U)

A SILVERIZED NYLON, OPEN-WEAVE MICROWAVE PROTECTIVE  
SUIT AND COTTON TWILL OVERGARMENT, TO BE WORN OVER  
CONVENTIONAL NAVY WORK CLOTHING, WAS DEVELOPED TO  
PROTECT PERSONNEL WORKING IN THE HIGH-DENSITY RADIO  
FREQUENCY FIELDS OF THE LARGER AND MORE POWERFUL  
RADAR SCANNING SYSTEMS ANTICIPATED ABOARD NAVAL  
VESSELS AND AT SHORE INSTALLATIONS. SINCE TOTAL  
BODY HEAT ABSORPTION PER UNIT TIME IS A CRITICAL  
FACTOR FOR THE SURVIVAL OF PERSONNEL EXPOSED TO A  
MICROWAVE FIELD, A PHYSIOLOGICAL EVALUATION OF THE  
PROTECTIVE CLOTHING SYSTEM WAS PERFORMED TO DETERMINE  
IF THE CLOTHING ITSELF WAS RESPONSIBLE FOR ANY  
ADDITIONAL THERMAL STRESS IN A WARM ENVIRONMENT.  
FOR A SERIES OF TWO-HOUR PERIODS, TWO MALE SUBJECTS  
WEARING THIS CLOTHING IN A CLIMATIC CHAMBER WERE  
EXPOSED TO A TEMPERATURE OF 85 DEGREES F, A  
RELATIVE HUMIDITY OF 45 PERCENT, A WIND VELOCITY OF  
11.5 MPH AND A SOLAR RADIATION OF 1.6 GM-CAL/SQ M/  
MIN. THE PROTECTIVE CLOTHING SYSTEM DID NOT PLACE  
ANY SIGNIFICANT PHYSIOLOGICAL HEAT STRESS ON  
PERSONNEL IN THE WARM ENVIRONMENT AS COMPARED TO THE  
WEARING OF CONVENTIONAL NAVAL WORK CLOTHING ALONE.  
VISUAL ACUITY WAS DECREASED SLIGHTLY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-691 144 11/5 6/17  
LITTON SYSTEMS INC MINNEAPOLIS MINN APPLIED SCIENCE  
DIV

INVESTIGATIONS OF HEAT AND MASS (WATER VAPOR AND  
LIQUID) MOVEMENT THROUGH CLOTHING SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 25 JUN 65-24 JUN 66,  
SEP 68 269P LARSEN, R. E. IRUST, L. W.  
;KYDD, A. R. ;GAUVIN, G. A. ;  
CONTRACT: DA-19-129-AMC-683(N)  
PROJ: DA-1-K-012501-A-032  
MONITOR: USA-NLABS, C/OM TR-69-31-CH, 56

UNCLASSIFIED REPORT

DESCRIPTORS: (•PROTECTIVE CLOTHING, TRANSPORT  
PROPERTIES), DESIGN, WATER VAPOR, WATER, TEMPERATURE,  
MODELS(SIMULATIONS), EVAPORATION, THERMOCOUPLES,  
TEXTILES, VENTILATION, MEASUREMENT, MATHEMATICAL  
ANALYSIS, FLOW CHARTING, ENVIRONMENTAL TESTS, HEAT  
TRANSFER, MASS TRANSFER (U)  
IDENTIFIERS: COMPUTER ANALYSIS (U)

THE REPORT DISCUSSES RESEARCH OF THE INVESTIGATIONS  
OF HEAT AND MASS (WATER VAPOR AND LIQUID)  
MOVEMENT THROUGH CLOTHING SYSTEMS AND SUMMARIZES THE  
RESULTS OF A THEORETICAL AND EXPERIMENTAL RESEARCH  
PROGRAM. EXPERIMENTAL STUDIES INCLUDED  
MEASUREMENTS OF PROFILES OF MEAN AND FLUCTUATING  
VELOCITY, TEMPERATURE, AND WATER VAPOR CONCENTRATION  
FOR VARIOUS FABRIC SPACINGS AND VENTILATING  
VELOCITIES. TRANSFER COEFFICIENT DATA OBTAINED  
FROM THESE PROFILES WERE COMPARED WITH TOTAL WATER  
AND HEAT LOSS RATES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-691 461 6/17 22/1  
IIT RESEARCH INST CHICAGO ILL

METEOROID THREAT TO EXTRAVEHICULAR SPACE SUIT  
ASSEMBLIES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAR 66-1 MAR 67,  
JUN 69 22P ZIMMERMAN, FRANK J. ;  
CONTRACT: AF 33(615)-3468  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-68-86

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXTRAVEHICULAR ACTIVITY, PRESSURE SUITS),  
(\*PROJECTILES, HAZARDS), (\*PRESSURE SUITS,  
VULNERABILITY), PARTICLES, SPACE CREWS, PROTECTIVE  
CLOTHING, IMPACT PREDICTION, IMPACT SHOCK, SHOCK  
RESISTANCE, PENETRATION, DAMAGE, AEROSPACE MEDICINE,  
PROBABILITY, UNCERTAINTY, TEXTILES, EXPERIMENTAL DESIGN,  
SPACE ENVIRONMENTS (U)  
IDENTIFIERS: FLUX DENSITY, \*METEORIDS (U)

THIS REPORT UTILIZES MOST RECENT METEOROID FLUX  
DATA AND ILLUSTRATES THE METHOD USED IN CALCULATING  
THE PROBABILITY OF METEOROID PUNCTURE FOR A SPACE-  
SUITED CREWMAN IN EARTH ORBIT. AN EXAMPLE OF THE  
METHOD IS SHOWN AND UNCERTAINTIES IN THE PREDICTION  
ARE REVIEWED. FINALLY, GUIDELINES ARE PRESENTED  
THAT COULD BE FOLLOWED IN PLANNING AN EXPERIMENTAL  
PROGRAM OF PENETRATION STUDIES ON SPACE SUIT  
MATERIALS INTENDED TO RESOLVE SOME OF THESE AREAS OF  
UNCERTAINTY. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-692 423 6/11 6/17  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

DIVER EQUIPMENT TESTS PERFORMED DURING THE JOINT U.  
S. NAVY/DUKE UNIVERSITY 1000 FOOT SATURATION  
DIVE. (U)

DESCRIPTIVE NOTE: FINAL REPT.:  
APR 69 33P HARTER, JOHN V. I  
REPT. NO. NEDU-RR-2-69

UNCLASSIFIED REPORT  
PORTIONS OF THIS DOCUMENT ARE NOT FULLY LEGIBLE. SEE  
INTRODUCTION TO THIS JOURNAL.

DESCRIPTORS: (\*UNDERWATER CLOTHING, \*BREATHING  
APPARATUS), (\*DIVING, LIFE SUPPORT), PERFORMANCE(HUMAN),  
THERMAL INSULATION, TEST METHODS, RESPIRATION, DESIGN(U)

A SERIES OF DIVING EQUIPMENT TESTS WERE PERFORMED  
AT DEPTHS OF 1000 AND 850 FEET DURING THE JOINT  
DUKE UNIVERSITY/NAVY 1000 FEET SATURATION DIVE  
AT DURHAM, NORTH CAROLINA. DESCRIPTION OF  
TESTS PERFORMED AND RESULTS THEREOF ARE PRESENTED FOR  
DOCUMENTATION PURPOSES. RECOMMENDATIONS FOR  
MODIFICATIONS AND FURTHER TESTING ARE PRESENTED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-694 013 6/17 13/10  
NAVAL MEDICAL RESEARCH INST BETHESDA MD

THEORETICAL THERMAL REQUIREMENTS FOR THE MARK II  
DIVING SYSTEM. (U)

DESCRIPTIVE NOTE: MEDICAL RESEARCH INTERIM REPT.,  
AUG 69 46P TAUBER, JOHN F. IRAWLINS;  
JOHN S. P. BOND, KENNETH R. I  
PROJ: M4306.20-60108  
MONITOR: NAVMED M4306.02-60108-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, THERMAL ANALYSIS),  
(\*DIVING, DEEP SUBMERGENCE), HEAT TRANSFER, THERMAL  
STABILITY, HUMAN FACTORS ENGINEERING, CONFIGURATION,  
METABOLISM, UNDERWATER VEHICLES, PRESSURE, TEMPERATURE,  
ENVIRONMENT, MATHEMATICAL PREDICTION, CORRELATION  
TECHNIQUES, EXPERIMENTAL DATA (U)  
IDENTIFIERS: MARK-2 DEEP DIVE SYSTEMS, PERSONNEL  
TRANSFER CAPSULES (U)

THEORETICAL HEATING REQUIREMENTS FOR THE  
MAINTENANCE OF THERMAL BALANCE IN A DIVER AT DEPTH  
AND THE PERSONNEL TRANSFER CAPSULE OF THE MARK 2  
DEEP DIVE SYSTEM ARE CONSIDERED. THE EFFECTS OF  
RADIATION, CONDUCTION, FORCED AND NATURAL CONVECTION,  
METABOLIC HEAT GENERATION AND RESPIRATORY HEAT LOSS  
ARE CONSIDERED AND HEAT REPLACEMENT REQUIREMENTS FOR  
VARIOUS CONFIGURATIONS OF DIVER GARMENTS ARE  
PRESENTED AS FUNCTIONS OF AMBIENT PRESSURE,  
TEMPERATURE AND PTC OPERATING CONDITIONS.  
THERMAL REQUIREMENTS FOR HEATING THE PTC ITSELF  
ARE ALSO CONSIDERED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-594 023 6/17 13/10  
NAVAL MEDICAL RESEARCH INST BETHESDA MD

EVALUATION OF THE NSRDL HEATER PUMP PERFORMANCE  
CHARACTERIZATICS AND RELIABILITY.

(U)

DESCRIPTIVE NOTE: MEDICAL RESEARCH INTERIM REPT.,  
AUG 69 22P JACKSON, DAVID L. ; TAUBER,  
JOHN F. ; RAWLINS, JOHN S. P. ;  
PROJ: M4306.02-60108  
MONITOR: NAVMED M4306.02-60108-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, HEATING ELEMENTS),  
(\*PUMPS, PERFORMANCE(ENGINEERING)), TEST FACILITIES,  
HUMAN FACTORS ENGINEERING, BODY TEMPERATURE, DEEP  
SUBMERGENCE, SIMULATION, TEST METHODS, FLUID FLOW (U)  
IDENTIFIERS: DIVING EQUIPMENT, EVALUATION, PERSONNEL  
TRANSFER CAPSULES (U)

EXPERIMENTS TO EVALUATE THE PERFORMANCE OF THE  
NSRDL HEATER PUMP WERE PERFORMED IN A COLD TANK.  
ONE TO THREE DIVERS WERE EMPLOYED, EACH WEARING A  
3/16-INCH FOAM NEOPRENE WET SUIT OVER A WELSON  
TUBING SUIT. THE SYSTEM WAS OBSERVED DURING OVER  
10 HOURS OF TESTING. THE DIVERS WERE MAINTAINED IN  
THESE CONDITIONS AT VARYING FLOW RATES AND SUIT INLET  
TEMPERATURES. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AC-694 130 6/17 6/11 13/1  
KANSAS STATE UNIV MANHATTAN INST FOR ENVIRONMENTAL  
RESEARCH

PROCEEDINGS OF THE SYMPOSIUM ON INDIVIDUAL COOLING,  
MARCH 17-18, 1969. (U)

JUL 69 285P NEVINS, RALPH G. ;  
CONTRACT: F44620-68-C-0020  
PROJ: AF-7921  
TASK: 792108  
MONITOR: AFOSR 69-2197TR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJECT THEMIS.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, ENVIRONMENT),  
(\*COOLING, \*SYMPOSIA), PHYSIOLOGY, COOLING + VENTILATING  
EQUIPMENT, EXTRAVEHICULAR ACTIVITY, LIFE SUPPORT, BODY  
TEMPERATURE, NUCLEAR POWER PLANTS, HEAT TRANSFER, FLIGHT  
CLOTHING, TEMPERATURE CONTROL, CONTROL SYSTEMS, PRESSURE  
SUITS (U)  
IDENTIFIERS: THEMIS PROJECT (U)

THE REPORT CONTAINS TWELVE PAPERS PRESENTED AT A  
SYMPOSIUM ON INDIVIDUAL COOLING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-697 022 6/14 5/5  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERS AFB  
OHIO

ANTHROPOMETRIC DIMENSIONS OF AIR FORCE PRESSURE-  
SUITED PERSONNEL FOR WORKSPACE AND DESIGN  
CRITERIA.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 69 259P ALEXANDER, MILTON ; GARRETT,  
JOHN W. ; FLANNERY, MICHAEL P. ;  
REPT. NO. AMRL-TR-69-6  
PROJ: AF-7184  
TASK: 718408

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ERRATA SHEET INSERTED.

DESCRIPTORS: (\*ANTHROPOMETRY, MILITARY PERSONNEL),  
(\*PRESSURE SUITS, MILITARY PERSONNEL), DESIGN, SPACE  
FLIGHT, EFFICIENCY

(U)

THE RESULTS OF AN ANTHROPOMETRIC SURVEY OF USAF  
PERSONNEL WEARING THE A/P22S-2 FULL  
PRESSURE SUIT FITTED IN ACCORDANCE WITH THE USAF  
EIGHT-SIZE, HEIGHT-WEIGHT SIZING PROGRAM  
ARE PRESENTED. ONE HUNDRED AND THIRTY-EIGHT  
MEASURES WERE TAKEN ON EACH OF THIRTY-FOUR SUBJECTS  
STANDING, SITTING AND SUPINE, WITH THE SUIT IN THE  
UNINFLATED, INFLATED, AND INFLATED-RESTRAINED  
CONDITIONS. FORTY CIRCUMFERENCES WERE MEASURED ON  
A SEPARATE SAMPLE OF THIRTY-TWO SUBJECTS STANDING AND  
SITTING, WITH THE SUIT UNINFLATED AND INFLATED.  
PICTORIAL AND VERBAL DESCRIPTIONS OF THE DIMENSIONS  
AND DETAILED NUMERICAL RESULTS, INCLUDING CLEARANCE  
RANGES, ARE PRESENTED. GRAPHS COMPARING VARIOUS  
DIMENSIONS ACROSS SUIT SIZES ARE PRESENTED IN THE  
APPENDIX. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-697 455 6/17  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

ZOOM BAG SCENARIO. (U)

69 4P GARRETT, JOHN W. ;ALEXANDER,  
MILTON ;  
REPT. NO. AMRL-TR-69-127  
PROJ: AF-7184  
TASK: 718408

UNCLASSIFIED REPORT  
AVAILABILITY: PUB. IN INTERCEPTOR, P20-21 OCT/  
NOV 69.

DESCRIPTORS: (\*PRESSURE SUITS, DESIGN), TESTS, PILOTS,  
COCKPITS, COMPATIBILITY, SURVIVAL KITS (U)  
IDENTIFIERS: A/P 225-6 PRESSURE SUITS, A/P 225-2  
PRESSURE SUITS, F-106 AIRCRAFT (U)

THE ESTABLISHMENT OF AN INFORMAL RAPPORT BETWEEN  
THE AEROSPACE MEDICAL RESEARCH LABORATORY-  
HA AT WRIGHT-PATTERSON AIR FORCE BASE AND  
THE 4756TH PTF AT TYNDALL AIR FORCE BASE  
LED TO THE COMPLETION OF TWO ENGINEERING ANTHROPOLOGY  
RESEARCH PROJECTS AND THE COMMENCEMENT OF A THIRD.  
A MAJOR ADVANTAGE OF THIS FIELD RESEARCH WAS THE  
USE OF PILOTS AND PRESSURE SUIT EXPERIENCED PERSONNEL  
AS SUBJECTS. ILLUSTRATIONS OF AN A/P225-6  
FULL PRESSURE SUITED PILOT IN A F-106 COCKPIT ARE  
INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-699 170 6/11 15/5  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

AD HOC COMMITTEE REPORT.

(U)

DESCRIPTIVE NOTE: RESEARCH REPT. 7-25 JAN 68,  
68 73P MURDOCH, RICHARD A. BEAGLES,  
JOHN A. ELKINS, JAMES H. FORAN, MICHAEL J.  
JENKINS, WALLACE T. I  
REPT. NO. NEDU-RR-3-68

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, MILITARY  
REQUIREMENTS), (\*DIVING, \*LIFE SUPPORT), LOGISTICS,  
HELMETS, BREATHING APPARATUS, GAS FLOW, COMMUNICATION  
SYSTEMS, LOGISTICS, DECOMPRESSION SICKNESS (U)

THE OBJECT OF THE STUDY WAS TO SURVEY THE FIELD OF  
DIVING EQUIPMENTS, CATALOGUE DEFICIENCIES OF EXISTING  
EQUIPMENTS, ENUMERATE EQUIPMENTS NOT NOW AVAILABLE  
WHICH SHOULD BE DEVELOPED AND TO RECOMMEND SHORT AND  
LONG RANGE DEVELOPMENT PROGRAMS. A SUMMARY OF COST  
BY EQUIPMENT IS INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-700 914 6/17  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE CREW  
EQUIPMENT DEPT

DESCRIPTION AND EVALUATION OF A PORTABLE DRY-ICE  
WATER-CONDITIONED SUIT SYSTEM FOR  
AIRCREW MEMBERS.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
NOV 69 22P ESPOSITO, JOHN J. ;  
REPT. NO. NADC-AC-6906  
PROJ: A34-531/202/70F12-424-402

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, COOLING), HEAT TRANSFER,  
DESIGN, CARBON DIOXIDE, HEAT TOLERANCE, EFFECTIVENESS,  
PORTABLE EQUIPMENT (U)  
IDENTIFIERS: DRY ICE (U)

A PORTABLE WATER-CONDITIONED SUIT SYSTEM, EMPLOYING  
A DRY-ICE COOLER DESIGNED AND CONSTRUCTED AT THE  
NAVAL AIR DEVELOPMENT CENTER AND A  
COMMERCIALY AVAILABLE WATER-COOLED VEST, WAS  
EVALUATED BY EXPOSING TWO SITTING-RESTING SUBJECTS AT  
SEA LEVEL PRESSURE TO ENVIRONMENTS OF 105F AND  
115F. TESTS WERE CONDUCTED WITH AND WITHOUT THE  
COOLING SYSTEM. SUBLIMATION OF APPROXIMATELY  
FIFTEEN POUNDS OF DRY-ICE KEPT THE SUBJECTS  
RELATIVELY FREE FROM EVIDENCES OF HEAT STRESS FOR  
PERIODS OF FOUR HOURS AT 115F. BASED ON A  
COMPARISON WITH A WET-ICE SYSTEM, THE DRY-ICE  
PORTABLE COOLER, POSSESSING SIGNIFICANT ADVANTAGES IN  
TERMS OF SIZE AND WEIGHT, PRODUCED EQUIVALENT COOLING  
OF THE SUBJECTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-701 864 5/5 6/17 16/4.2 15/5  
QUARTERMASTER RESEARCH AND ENGINEERING CENTER NATICK  
MASS

HUMAN FACTORS STUDY OF QMC CLOTHING AND EQUIPMENT  
DURING COLD WEATHER TESTS OF THE SERGEANT MISSILE  
SYSTEM. II. (U)

DESCRIPTIVE NOTE: ENGINEERING PSYCHOLOGY RESEARCH STUDY  
REPT.,

JUN 62 14P MCGINNIS, JOHN M. ;  
ZIMMERER, THEODORE ;  
REPT. NO. GREC-EPR-2  
PROJ: DA-7-X-9501001

UNCLASSIFIED REPORT

DESCRIPTORS: (•SURFACE TO SURFACE MISSILES, ARMY  
EQUIPMENT), (•EXPOSURE SUITS, COMPATIBILITY), HUMAN  
FACTORS ENGINEERING, COLD WEATHER TESTS, ARCTIC REGIONS,  
ARMY OPERATIONS, LAUNCHING SITES, GROUND SUPPORT  
EQUIPMENT, CLOTHING (U)

A PREVIOUS STUDY WAS BASED ON COLD WEATHER TESTS OF  
THE SERGEANT MISSILE SYSTEM WHICH WERE HELD AT  
THE EGLIN AFB CLIMATIC LABORATORY DURING THE  
SUMMER OF 1959. THE OBSERVATIONS DESCRIBED IN THE  
PRESENT REPORT WERE MADE IN THE SAME LABORATORY IN  
1962. BOTH STUDIES ARE PART OF A CONTINUING EFFORT  
BY THE QUARTERMASTER CORPS TO INSURE  
COMPATIBILITY BETWEEN THE QM-EQUIPPED SOLDIER AND  
ARMY MILITARY SYSTEMS WHICH HE WILL BE REQUIRED TO  
OPERATE. THE GENERAL PURPOSE OF THESE STUDIES IS TO  
DETECT PROBLEMS ASSOCIATED WITH QMC CLOTHING IN THE  
OPERATION OF ARMY EQUIPMENT SYSTEMS, AND TO REPORT  
THESE PROBLEMS TO THE RESPONSIBLE DESIGN AND  
DEVELOPMENT GROUPS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-701 872 5/5 6/17 16/4.2 15/5  
QUARTERMASTER RESEARCH AND ENGINEERING CENTER NATICK  
MASS

HUMAN FACTORS STUDY OF GMC CLOTHING AND EQUIPMENT  
DURING COLD WEATHER TESTS OF THE PERSHING MISSILE  
SYSTEM. (U)

DESCRIPTIVE NOTE: ENGINEERING PSYCHOLOGY RESEARCH STUDY  
REPT.:

APR 62 16P MCGINNIS, JOHN M. ;  
ZIMMERER, THEODORE ;  
REPT. NO. QREC-EPR-1  
PROJ: DA-7-X-9501001

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SURFACE TO SURFACE MISSILES, ARMY  
EQUIPMENT), (\*EXPOSURE SUITS, COMPATIBILITY), HUMAN  
FACTORS ENGINEERING, COLD WEATHER TESTS, ARCTIC REGIONS,  
ARMY OPERATIONS, LAUNCHING SITES, GROUND SUPPORT  
EQUIPMENT, GLOVES, HEATERS (U)  
IDENTIFIERS: PERSHING (U)

THE PRIMARY PURPOSE OF THE PSYCHOLOGY LABORATORY  
PARTICIPATION IN THE TEST WAS TO DETECT HUMAN FACTORS  
PROBLEMS ASSOCIATED WITH QUARTERMASTER CORPS  
STANDARD CLOTHING AND EQUIPMENT IN THE OPERATION OF  
THE PERSHING MISSILE SYSTEM AND TO REPORT THESE  
PROBLEMS TO THE RESPONSIBLE DESIGN AND DEVELOPMENT  
GROUPS. SECONDARY GOALS WERE TO MAKE PRELIMINARY  
STUDIES CONCERNING THE NEW EXPERIMENTAL INTEGRATED  
CLOTHING SYSTEM, AND THE FEASIBILITY OF USING  
ELECTRICALLY HEATED HANDWEAR FOR PERFORMING CRITICAL  
TASKS DURING OPERATION OF THE PERSHING EQUIPMENT.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-701 874 15/5  
QUARTERMASTER RESEARCH AND ENGINEERING CENTER NATICK  
MASS

SLEEPING PROTECTION FOR WARM AND COOL ENVIRONMENTS;  
THE EFFECT OF UTILIZING AN ATTACHABLE PONCHO  
LINER. (U)

DESCRIPTIVE NOTE: RESEARCH STUDY REPT.,  
OCT 60 10P BYRON, ROBERT F. ;  
REPT. NO. QREC-FPB-2  
PROJ: DA-7-X-9030001

UNCLASSIFIED REPORT  
PORTIONS OF THIS DOCUMENT ARE NOT FULLY LEGIBLE.

DESCRIPTORS: (CLOTHING, ARMY EQUIPMENT), PROTECTIVE  
CLOTHING, SLEEPING BAGS, ENVIRONMENTAL TESTS,  
COMPATIBILITY, ARMY OPERATIONS (U)

FOUR COMBINATIONS OF ITEMS FOR PROVIDING  
ENVIRONMENTAL PROTECTION TO THE SLEEPING MAN UNDER  
COOL ENVIRONMENTAL CONDITIONS AND THREE COMBINATIONS  
IN A WARM ENVIRONMENT WERE EVALUATED IN TERMS OF THE  
SLEEPING PROTECTION PROVIDED BY EACH COMBINATION.  
OF PARTICULAR INTEREST IN THE STUDY WAS THE  
PERFORMANCE OF A QUARTERMASTER EXPERIMENTAL  
ATTACHABLE PONCHO LINER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-712 124 6/17  
NORTHROP CORPORATE LABS HAWTHORNE CALIF

INVESTIGATION OF VIBRATION AND IMPACT PROTECTION OF  
THE HUMAN HEAD AND NECK. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 66-15 NOV 67,  
DEC 69 88P MATTINGLY, T. E. IFELDER, J.  
W. LOMBARD, C. F. I  
REPT. NO. NCL-67-70R  
CONTRACT: AF 33(615)-5119  
PROJ: AF-7231  
TASK: 723101  
MONITOR: AMRL TR-69-112

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELMETS, FLIGHT CLOTHING),  
(\*HEAD(ANATOMY), PROTECTION), AEROSPACE CRAFT, IMPACT  
SHOCK, VIBRATION, ACCELERATION, LANDING IMPACT,  
ABANDONMENT, PARACHUTE DESCENTS, BREATHING MASKS, SAFETY  
BELTS, SHELLS(STRUCTURAL FORMS), MATERIALS, VENTILATION,  
PRESSURIZATION, VOICE COMMUNICATIONS (U)

A SUMMARY OF THE INVESTIGATION LEADING TO THE  
FABRICATION OF A PROTOTYPE MODEL OF A HEAD AND NECK  
PROTECTIVE SYSTEM FOR AIRCREW MEMBERS IS PRESENTED.  
THE SYSTEM PROVIDES IMPACT, VIBRATION AND  
ENVIRONMENTAL PROTECTION FOR THE WEARER FROM 0 TO  
OVER 82,000 FEET ALTITUDE. THE SYSTEM CONSISTS OF A  
HELMET AND A PNEUMATICALLY OPERATED NECK RESTRAINT  
DEVICE WHICH IS USED TO STIFFEN THE COUPLING BETWEEN  
THE HELMET AND THE WEARER'S TORSO DURING VIBRATION  
AND ACCELERATION ENVIRONMENTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-702 245 6/17 19/4 13/1  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

DEVELOPMENT OF A PERSONAL COOLING SYSTEM FOR  
EXPLOSIVE ORDNANCE DISPOSAL PERSONNEL. (U)

DESCRIPTIVE NOTE: FINAL REPT. NOV 68-SEP 69,  
DEC 69 19P CRAIN, BERRY, JR.; IACONO,  
VINCENT D. ;

REPT. NO. C/PLSEL-69  
PROJ: DA-1-J-664713-D-547  
MONITOR: USA-NLABS TR-70-37-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, COOLING), (\*COOLING  
+ VENTILATING EQUIPMENT, BODY ARMOR), (\*FRAGMENTATION  
AMMUNITION, DISPOSAL), (\*UNDERWEAR, DESIGN), BATTERY  
COMPONENTS, ELECTRIC BATTERIES, BLOWERS, PROTECTIVE  
CLOTHING, WEIGHT, COSTS, TEST METHODS (U)

IDENTIFIERS: ORDNANCE DISPOSAL PERSONNEL, EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL, EXPLOSIVE ORDNANCE  
DISPOSAL (U)

THE DEVELOPMENT AND CONSTRUCTION OF A PERSONAL  
COOLING SYSTEM TO BE USED BY MILITARY PERSONNEL  
ENGAGED IN THE CLEARANCE AND DISPOSAL OF MUNITIONS IN  
THE FIELD IS DISCUSSED. THE TOTAL SYSTEM CONSISTS  
OF AN AIR DISTRIBUTION UNDERGARMENT AND A BATTERY-  
POWERED VENTILATING BACKPACK. THE VENTILATING  
BACKPACK IS DESIGNED TO PROVIDE 18 CFM OF AMBIENT AIR  
FOR VENTILATION OF THE TORSO TO RELIEVE THE HEAT  
STRESS IMPOSED ON THE INDIVIDUAL BY THE ARMORED  
CLOTHING WORN OVER THE AIR DISTRIBUTION SYSTEM.  
EACH CHARGE OF THE MODULAR RECHARGEABLE BATTERY  
ASSEMBLY PROVIDES ADEQUATE POWER TO OPERATE THE  
BLOWER FOR TWO HOURS. (AUTHOR) (U)



UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

0702 537 6/17  
MIROYAL INC WAYNE N J RESEARCH CENTER

RESEARCH AND DEVELOPMENT ON A PASSIVELY PRESSURIZED  
FLIGHT UNIFORM. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 66-OCT 68,  
DEC 69 34p FOWKES, ROBERT A. ; OLSON,

MARK W. ;  
CONTRACT: AF 33(615)5261  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-69-56

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, DESIGN), HIGH ALTITUDE,  
FLIGHT CLOTHING, DESIGN, RESPIRATION, PROTECTION (U)

A HIGH ALTITUDE PROTECTION SUIT WAS DEVELOPED OF THE PARTIAL PRESSURE TYPE THAT UTILIZES 40 SEALED CELLS EACH CONTAINING A SMALL AIR CHARGE SO THEY EXPAND IN ACCORD WITH BOYLE'S LAW WHEN THE ATMOSPHERIC PRESSURE IS REDUCED. THESE INDEPENDENTLY ACTING, EXPANDABLE, TUBULAR CELLS ARE RESTRAINED WITHIN A STRETCH RESISTANT BUT POROUS COVERALL IN A MANNER TO ALLOW THEM TO PRESSURIZE THE BODY OF THE WEARER. WHEN THE COVERALL IS WORN WITH PRESSURE GLOVES, BOOTS AND A PRESSURE HELMET, IT IS POSSIBLE TO PRESSURIZE THE ENTIRE BODY SUFFICIENTLY FOR ALTITUDE EXPOSURE UP TO 100,000 FEET FOR AT LEAST SEVERAL MINUTES. THE SUIT IS FABRICATED OF NOMEX MATERIAL, WITH PLEATED CELLS OF POLYURETHANE, AND AN INNER COMFORT LINER. THE EXPERIMENTAL SUITS WERE EVALUATED THROUGH ACTUAL WEAR IN THE ALTITUDE CHAMBERS AT THE USAF SCHOOL OF AEROSPACE MEDICINE. RESULTS OF THESE TESTS CONFIRM THE POTENTIAL OF THIS APPROACH FOR PROVIDING AIRCREW PROTECTION. FURTHER REFINEMENT IS NEEDED TO OBTAIN A DESIGN MORE SUITABLE FOR USE IN THE FIELD AND TO ASSURE BALANCED RESPIRATORY PRESSURES.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-735 064 6/17 18/2  
NAVAL MEDICAL RESEARCH INST BETHESDA MD

EVALUATION OF A DIVER'S THERMONUCLEAR SWIMSUIT  
HEATER SYSTEM. (U)

DESCRIPTIVE NOTE: MEDICAL RESEARCH INTERIM REPT.,  
FEB 70 19P TAUBER, JOHN F. TRAWLINS,  
JOHN S. P. BOND, KENNETH R. ;  
PROJ: M4306.07-1003  
MONITOR: NAVMED M4306.07-1003-3

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, HEATING), (\*HEATERS,  
\*RADIOACTIVE ISOTOPES), TEMPERATURE, STRESS (PHYSIOLOGY),  
HYPOTHERMIA, RADIATION HAZARDS, EFFICIENCY (U)  
IDENTIFIERS: \*RADIOISOTOPE HEAT SOURCES, SEALAB 3  
MANNED SUBMERSIBLE (U)

THE PRESENT STATE OF THE THERMONUCLEAR (I.E.,  
RADIOISOTOPE HEAT SOURCE) DIVER HEATING SYSTEM IS  
DISCUSSED AND THE RESULTS OF THE ONLY DIVE TO DATE  
USING THIS SYSTEM ARE REPORTED. THE INLET AND  
OUTLET TEMPERATURES OF THE SYSTEM ARE RECORDED  
TOGETHER WITH THE TIME-COURSE OF SKIN AND RECTAL  
TEMPERATURES. IT IS CONCLUDED THAT THE SYSTEM IN  
ITS PRESENT STATE IS INCAPABLE OF MAINTAINING THERMAL  
BALANCE IN A DIVER AT DEPTH, AND ITS USE UNDER  
SEALAB III CONDITIONS WOULD ENTAIL A GRAVE RISK OF  
HYPOTHERMIA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-705 455 6/16 13/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

VORTEX TUBE AS A THERMAL PROTECTIVE DEVICE. (U)

69 5P VAN PATTEN, ROBERT E. ;  
GAUDIO, RALPH , JR;  
REPT. NO. AMRL-TR-68-187  
PROJ: AF-7222  
TASK: 722205

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AEROSPACE MEDICINE, V40 N3  
P289-292 MAR 69.

DESCRIPTORS: (\*AVIATION PERSONNEL, COOLING + VENTILATING  
EQUIPMENT), (\*HILSCH TUBES, FLIGHT CLOTHING), COMPRESSED  
AIR, REFRIGERATION SYSTEMS, TEST METHODS, HEAT  
TOLERANCE, TIME, PULSE RATE, BODY TEMPERATURE, SWEAT  
GLANDS, ENDURANCE (PHYSIOLOGY) (U)  
IDENTIFIERS: \*VORTEX TUBES (U)

THE VORTEX TUBE IS CAPABLE OF PRODUCING  
REFRIGERATION WHEN DRIVEN BY COMPRESSED AIR. TO  
EVALUATE ITS AIRMAN COOLING CAPABILITIES, RESTING  
SUBJECTS WERE STUDIED IN A 54C DRY BULB, 40C WET  
BULB ENVIRONMENT WHILE WEARING AN MA-3 VENTILATING  
GARMENT. DURING THE FIRST SESSION, EACH SUBJECT WAS  
EXPOSED TO HIS SUBJECTIVE TOLERANCE WITHOUT THE  
VORTEX TUBE. WITH THE VORTEX TUBE PROVIDING 13C  
INLET AIR TO THE MA-3, EACH SUBJECT WAS EXPOSED FOR  
A PERIOD EQUAL TO HIS ENDURANCE TIME (SECOND  
SESSION) AND FOR A PERIOD EQUAL TO TWICE HIS  
ENDURANCE TIME (THIRD SESSION). HEART RATE AND  
RECTAL TEMPERATURE WERE RECORDED CONTINUOUSLY.  
SWEAT LOSS AND SWEAT EVAPORATED WERE CALCULATED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-706 888 5/5 6/17  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

ANTHROPOLOGICAL APPLICATIONS IN HIGH ALTITUDE FLIGHT  
SYSTEMS. (U)

MAR 70 18P ALEXANDER, MILTON ; GARRETT,  
JOHN W. ; ROBINETTE, JOAN C. ;  
REPT. NO. AMRL-TR-70-3  
PROJ: AF-7184  
TASK: 718408

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ANTHROPOMETRY, MAN MACHINE SYSTEMS),  
(\*FLIGHT CLOTHING, \*HUMAN FACTORS ENGINEERING), HIGH  
ALTITUDE, DESIGN, PRESSURE SUITS, AVIATION PERSONNEL (U)

THE REPORT REFLECTS RESEARCH ON VARIOUS PHASES OF  
THE DIMENSIONAL REQUIREMENTS OF THE PRESSURE SUITED  
MAN IN THE MAN-MACHINE SYSTEM. THE SPATIAL  
REQUIREMENTS FOR THE MAN IN A COCKPIT OR CAPSULE AND  
AN EJECTION AND ESCAPE MECHANISMS OR WEARING CLOTHING  
AS PROTECTION AGAINST HOSTILE ENVIRONMENTAL FACTORS,  
SUCH AS HEAT, COLD, VACUUM, HIGH G, AND RADIATION,  
PRESENT SEPARATE PROBLEMS FOR THE DESIGN ENGINEER  
THAT CAN BE HELPED EFFECTIVELY WITH THE APPLICABLE  
ANTHROPOLOGICAL DATA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-708 680 6/17 13/1  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

SEALAB III - DIVER'S ISOTOPIC SWINSUIT-HEATER  
SYSTEM.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,  
MAY 70 128p BAYLES, JOHN J. (TAYLOR,  
DOUGLAS ;  
REPT. NO. NCEL-TN-1087  
PROJ: NCEL-64-005

UNCLASSIFIED REPORT

DESCRIPTORS: (•UNDERWATER CLOTHING, •HEATING ELEMENTS),  
DIVING, PLUTONIUM, RADIOACTIVE ISOTOPES, PLASTICS,  
PIPES, PUMPS, HYDROSTATIC PRESSURE, PROTECTION,  
ENVIRONMENTAL TESTS, RELIABILITY, SPECIFICATIONS (U)  
IDENTIFIERS: BACKPACKS, •RADIOISOTOPE HEAT SOURCES, (U)  
•SEALAB 3

THE ATOMIC ENERGY COMMISSION AND THE DEEP  
SURMERGENCE SYSTEMS PROJECT OFFICE INCLUDED  
THE DEVELOPMENT AND EVALUATION OF AN ISOTOPIC  
SWINSUIT HEATING SYSTEM IN THE SEALAB III PROGRAM  
TO DEMONSTRATE A USE OF ATOMIC ENERGY AS A METHOD FOR  
PROVIDING SUPPLEMENTAL HEAT TO DIVERS. THE TASK OF  
DEVELOPING A SWINSUIT HEATING 'PACKAGE' WAS ASSIGNED  
TO THE NAVAL CIVIL ENGINEERING LABORATORY,  
PORT HUENEME, CALIFORNIA. THE 'PACKAGE'  
UTILIZES AEC FURNISHED PLUTONIUM 238 CAPSULES FOR  
HEATING WATER WHICH IS PUMPED THROUGH A CLOSED-CYCLE  
SYSTEM INCLUDING A DIVER'S UNDERGARMENT FITTED WITH  
CLOSELY SPACED PLASTIC TUBING. THE DIVER WEARS A  
WET SUIT OVER THIS UNDERGARMENT TO AID IN RETAINING  
THE HEAT PROVIDED. THE 'PACKAGE' OR ISOTOPE  
BACKPACK SEGMENT IS DESIGNED TO BE ATTACHED TO A  
MODIFIED MARK VIII MIXED GAS BREATHING APPARATUS  
BACKPACK. THE SPECIFICATIONS BASED UPON AVAILABLE  
INFORMATION AT THE TIME OF INITIAL DEVELOPMENT  
STAGES, DID NOT PROVIDE FOR SUFFICIENT ISOTOPE TO  
PRODUCE ADEQUATE SUPPLEMENTAL HEAT. HOWEVER, THE  
FINAL BACKPACK DESIGN DID NOT MATERIALLY AFFECT THE  
DIVER'S CAPABILITIES AND THE SYSTEM WAS SUCCESSFULLY  
TESTED WITH RESPECT TO ITS DESIGN OPERATIONAL  
CHARACTERISTICS. (AUTHOR)

(U)

UNCLASSIFIED

/ZON08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-708 874 11/5 15/5  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

A STUDY OF SEAM LEAKAGE IN COATED FABRICS. (U)

DESCRIPTIVE NOTE: SUMMARY REPT. AUG 67-JUL 69,  
APR 70 49P FREDERICK, EDWARD B. HENRY,  
MALCOLM C. ;  
REPT. NO. C/PLSEL-TS-169  
MONITOR: USA-NLABS TR-70-59-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEXTILES, MOISTUREPROOFING), (\*PROTECTIVE  
CLOTHING, LEAKAGE(FLUID)), PERMEABILITY, TEST METHODS,  
PROCESSING (U)  
IDENTIFIERS: SEWING (U)

EXTENSIVE INVESTIGATIONS OF SEWN SEAMS IN COATED  
FABRICS HAVE BEEN CONDUCTED. THE RELATIVE ROLL OF  
THREAD, SEWING MACHINE COMPONENTS, STITCH AND SEAM  
TYPES AND PROPERTIES OF FABRICS HAVE BEEN EVALUATED  
AS PARAMETERS INVOLVED IN SEAM LEAKAGE. UTILIZATION  
OF VARIOUS EXPERIMENTAL SEAM CONSTRUCTIONS,  
GASKETING, APPLICATION OF HEAT DURING SEAM SEWING AND  
OTHER TECHNIQUES WERE ATTEMPTED AS POTENTIALLY USEFUL  
APPROACHES IN COMBATING SEAM LEAKAGE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-709 570 6/17  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT

DEVELOPMENT OF PRACTICAL HIGH-INTENSITY THERMAL  
PROTECTION SYSTEMS.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
JUL 70 20P STOLL, ALICE M. ICHIANTA,  
MARIA A. JUDGE, L. B. ;  
REPT. NO. NADC-MR-7016  
PROJ: A34-531/202/70F32-523-401

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, \*THERMAL INSULATION),  
TEXTILES, COLORS, THERMAL PROPERTIES, OPTICAL  
PROPERTIES, HEAT TRANSFER, NUCLEAR EXPLOSIONS, THERMAL  
RADIATION, JET FIGHTERS (U)  
IDENTIFIERS: F-4 AIRCRAFT (U)

THE MILITARY REQUIREMENT FOR HIGH-INTENSITY THERMAL  
PROTECTION ENTAILS PROVISION OF A SYSTEM WHICH IS  
EFFECTIVE IN THE NUCLEAR WEAPON RANGE AND AT THE SAME  
TIME PRACTICAL FROM THE LOGISTICS POINT OF VIEW AND  
COMFORTABLE FOR EXTENDED PERIODS OF WEAR. WITH  
THESE ENDS IN MIND, SMALL-SCALE LABORATORY PROCEDURES  
AND FULL-SCALE EVALUATION PROCEDURES WERE DEVISED  
WHEREBY SPECIFIC SYSTEMS COULD BE DESIGNED TO MEET  
SPECIFIC NEEDS. THERMAL BARRIERS WERE DESIGNED  
THROUGH APPLICATION OF BASIC HEAT TRANSFER PRINCIPLES  
WITH CAREFUL CONSIDERATION FOR THE INFLUENCE OF  
THERMAL AND OPTICAL PROPERTIES OF MATERIALS ON HEAT  
EXCHANGE. IN THE PRESENT EXAMPLE A GREEN ASSEMBLY  
WAS DEVELOPED TO REPLACE A WHITE ONE DESIGNED FOR  
PROTECTION OF FLIGHT PERSONNEL FROM THE THERMAL  
EFFECTS OF NUCLEAR WEAPONS. IN THERMAL EXPOSURES  
DELIVERING APPROXIMATELY 50 CAL/(SQ CM) IN 2  
SECONDS IN SOME AREAS, WITH AN OVERALL AVERAGE OF  
ABOUT 20 CAL/(SQ CM) IN 2 SECONDS, THE NEW SYSTEM  
OFFERED PROTECTION EQUAL TO THAT OF THE WHITE  
ASSEMBLY WHILE WEIGHING ONLY HALF AS MUCH AND  
REPRESENTING SIGNIFICANT ADVANTAGES IN COMFORT AND  
LOGISTICS. THE PROCEDURES DEVELOPED IN THIS STUDY  
ARE GENERAL IN NATURE AND WIDELY APPLICABLE TO THE  
DEVELOPMENT OF OTHER THERMAL PROTECTION SYSTEMS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-711 676 6/11  
IIT RESEARCH INST CHICAGO ILL

EXPLORATORY DEVELOPMENT OF PRESSURE SUIT MOBILITY  
JOINTS, GLOVES AND HELMET. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 66-APR 69;  
APR 70 19P SLOWIK, JOZEF ; MARCUM, ALFRED  
; BURNS, MARVIN ;  
REPT. NO. IITRI-J6028-FR  
CONTRACT: AF 33(615)-3468  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-69-64

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, DESIGN), MOBILITY,  
GLOVES, HELMETS, JOINTS, MATERIALS, THERMAL PROPERTIES,  
METEORITES, SPACE CREWS, AIR FORCE RESEARCH (U)  
IDENTIFIERS: MICROMETEROIDS (U)

A RESEARCH PROGRAM WAS CONDUCTED TO INVESTIGATE AND  
DEVELOP APPROACHES FOR IMPROVING PRESSURE SUIT  
MOBILITY AND COMFORT. NOVEL CONCEPTS WERE GENERATED  
AND UNIQUE PROPERTIES OF MATERIALS WERE EXPLOITED TO  
IMPLEMENT THESE CONCEPTS FOR VARIOUS PRESSURE SUIT  
COMPONENTS. SINGLE PLANE MOBILITY JOINTS OF LOW  
PROFILE FABRIC MATERIALS WERE MADE WITH MOBILITY  
APPROACHING THAT OF HARD JOINTS. WORK WAS BEGUN TO  
ADAPT THE SAME PRINCIPLES TO BIAXIAL JOINTS.  
ADVANCED CONCEPTS FOR IMPROVING THE TACTILITY AND  
MOBILITY OF PRESSURE GLOVES WERE IMPLEMENTED IN  
SEVERAL MODELS OF EXPERIMENTAL GLOVES. EXPLORATORY  
DEVELOPMENT OF PARTIAL PRESSURE HELMET WAS INITIATED.  
AS A PART OF THE BROAD SYSTEMS STUDY, THE THERMAL  
CONTROL PROBLEMS AND MICROMETEOROID THREAT TO THE  
EXTRAVEHICULAR CREWMAN WERE ALSO INVESTIGATED.  
(AUTHOR) (U)

UNCLASSIFIED

/ZOM08



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-712 505 11/5  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT

HEAT TRANSFER THROUGH FABRICS.

(U)

SEP 70 41P STOLL, ALICE M. ICHIANTA,  
MARIA A. I  
REPT. NO. NADC-MR-7017  
PROJ: A34-531/202/70F32-523-401, A34-531/202/70F12-  
5245402

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED IN PART AT THE AIR FORCE  
MATERIALS LAB. SYMPOSIUM, MIAMI BEACH, FLA.,  
MAY 70.

DESCRIPTORS: (\*TEXTILES, HEAT TRANSFER), (\*PROTECTIVE  
CLOTHING, \*THERMAL INSULATION), CONDUCTION(HEAT  
TRANSFER), CONVECTION(HEAT TRANSFER), THERMAL RADIATION,  
VAPORIZATION, SKIN(ANATOMY), PROTECTION, WOUNDS AND  
INJURIES, AIR FORCE RESEARCH (U)

HEAT IS TRANSFERRED THROUGH FABRICS BY CONVECTION,  
CONDUCTION AND RADIATION AND UNDER CERTAIN  
CIRCUMSTANCES BY VAPORIZATION. EACH MODE IS SUBJECT  
TO DIFFERENT PHYSICAL PRINCIPLES BUT THE EFFECT OF  
THE TOTAL HEAT ABSORBED BY UNDERLYING SKIN IS THE  
SAME: IF THE RESULTANT SKIN TEMPERATURE RISE IS  
SUFFICIENTLY HIGH AND MAINTAINED SUFFICIENTLY LONG,  
INJURY RESULTS. THE EXTENT OF INJURY IS PREDICTED  
UNDER CERTAIN CONTROLLED CONDITIONS AND THESE  
CONDITIONS MAY BE USED TO DISCLOSE PROTECTION  
PRINCIPLES APPROPRIATE TO EACH MODE OF TRANSFER.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-712 994 6/17  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

FLOW OF HEAT AND WATER VAPOR THROUGH PROTECTIVE  
CLOTHING.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 70 22P VOTTA, FERDINAND, JR.; SPANO,  
LEO A. ;  
REPT. NO. C/PLSEL-78  
PROJ: DA-1-J-062110-A-533  
MONITOR: USA-NLABS TR-71-5-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, HEAT TRANSFER),  
WATER VAPOR, COOLING, ISOCYANATE PLASTICS, TEXTILES,  
NYLON, BODY TEMPERATURE, LAMINATES

(U)

IN A CONTINUING EFFORT TO IMPROVE THE COMFORT AND  
WORKING EFFICIENCY OF PERSONS WEARING VARIOUS  
PROTECTIVE CLOTHING SYSTEMS, A SWEATING CYLINDER TO  
TEST THE HEAT AND WATER VAPOR TRANSFER  
CHARACTERISTICS OF SUCH SYSTEMS WAS DESIGNED,  
CONSTRUCTED AND TESTED. WITH THIS EQUIPMENT, THE  
HEAT AND WATER VAPOR TRANSFER THROUGH A CARBON-  
TREATED POLYURETHANE-NYLON TRICOT LAMINATED CLOTHING  
SYSTEM WAS DETERMINED UNDER A WIDE RANGE OF SIMULATED  
ENVIRONMENTAL CONDITIONS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-713 430

6/17

6/19

15/7

ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK  
MASS

TACTICAL IMPLICATIONS OF THE PHYSIOLOGICAL STRESS  
IMPOSED BY CHEMICAL PROTECTIVE CLOTHING SYSTEMS. (U)

70

15P

GOLDMAN, RALPH F. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING,  
\*STRESS(PHYSIOLOGY)); MILITARY TACTICS, TEXTILES, HEAT  
TRANSFER, TOLERANCES(PHYSIOLOGY), TESTS (U)

THE PAPER DETAILS THE SUBSEQUENT LABORATORY  
STUDIES, DELINEATES THE PHYSIOLOGICAL PROBLEMS,  
DESCRIBES SUBSEQUENT, SUCCESSFUL FIELD EVALUATIONS  
AND SUGGESTS SOME OF THE TACTICAL LIMITATIONS IMPOSED  
BY WEARING CURRENT CHEMICAL PROTECTIVE SYSTEMS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM08

AD-713 573 6/17  
ARMY NATICK LABS MASS

MODERN COUNTER-SURVEILLANCE IN COMBAT  
CLOTHING,

(U)

70 14P RAMSLEY, A. O. ;

UNCLASSIFIED REPORT  
AVAILABILITY: MICROFICHE COPIES ONLY.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*CAMOUFLAGE),  
COLORS, REFLECTION, OPTICAL PROPERTIES, SOILS, TREES,  
EXPERIMENTAL DATA, AERIAL PHOTOGRAPHY, SNIPERSCOPES,  
INFRARED PHOTOGRAPHY, IMAGE INTENSIFIERS(ELECTRONICS)(U)  
IDENTIFIERS: SURVEILLANCE (U)

THE PAPER DESCRIBES THE DEVELOPMENT OF A COLORANT  
SYSTEM FOR COMBAT CLOTHING THAT SATISFIES THE  
REFLECTANCE REQUIREMENTS FOR CAMOUFLAGE PROTECTION  
AGAINST DETECTION BY ALL OF THE MODERN SURVEILLANCE  
DEVICES, AS WELL AS BY VISUAL OBSERVATION.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-713 581 6/17  
ARMY NATICK LABS MASS

MICROCLIMATE-CONTROLLED (THERMALIBRIUM) CLOTHING  
SYSTEMS FOR MILITARY APPLICATIONS.

(U)

70 ISP SPANO, LEO A. ; IACONO,  
VINCENT D. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (PROTECTIVE CLOTHING, CONTROLLED  
ATMOSPHERES), REVIEWS, AMMUNITION, TOXICITY,  
VENTILATION, AIR CONDITIONING EQUIPMENT, HEATING, GAS  
FLOW, CONTROL, AIRCRAFT, TROPICAL REGIONS, THERMAL  
RADIATION, FLIGHT CLOTHING

(U)

CONTENTS: DESIGN PRINCIPLES FOR MICROCLIMATE-  
CONTROLLED PROTECTIVE CLOTHING SYSTEMS; PROTECTIVE  
CLOTHING SYSTEM FOR EXPLOSIVE ORDNANCE DISPOSAL;  
AIR-CONDITIONED CLOTHING FOR ARMY AIRCREWMEN; AND  
PERFORMANCE EVALUATION OF AIR-CONDITIONED  
CLOTHING.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-714 224 6/11  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

PASSIVE THERMAL CONTROL SYSTEMS FOR  
ADVANCED SPACE SUIT CONCEPTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 64-JAN 68,  
NOV 68 179P DUSABLON, LOUISE V. IVOTTA,  
FERDINAND, JR. ISCHNEIDER, NATHANIEL S. ISPANO,  
LEO A. ;

CONTRACT: NASA ORDER-R-135

MONITOR: USA-NLABS, C/OM

25-CE.54

UNCLASSIFIED REPORT

DESCRIPTORS: (•PRESSURE SUITS, TEMPERATURE CONTROL),  
PERMEABILITY, PERSPIRATION, COMPOSITE MATERIALS,  
POLYMERS, MEMBRANES, DIFFUSION, COOLING, VOLTAGE, SPACE  
FLIGHT, EXTRAVEHICULAR ACTIVITY, LUNAR ENVIRONMENT (U)  
IDENTIFIERS: TEMPERATURE CONTROL (U)

PERVAPORATION OF WATER FROM A SPACE SUIT HAS BEEN  
PROPOSED AS A METHOD OF COOLING AN ASTRONAUT. THE  
PURPOSE OF THIS PROGRAM WAS TO INVESTIGATE THE  
VARIOUS PRINCIPLES, TECHNIQUES AND MATERIAL DESIGNS  
APPLICABLE TO THE ENGINEERING OF A SYSTEM CAPABLE OF  
TRANSFERRING UP TO 3000 BTU/HR. FOUR DIFFERENT  
APPROACHES WERE INVESTIGATED WITH AN EVENTUAL  
PROTOTYPE KEPT IN VIEW. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-714 577 6/11  
HAMILTON STANDARD WINDSOR LOCKS CONN

INTEGRATED MANEUVERING LIFE SUPPORT  
SYSTEM.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 31 MAY 68-31 OCT 69.  
JUL 70 61P HOWARD DOUGLAS C. ;  
CONTRACT: F33615-67-C-1946  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-69-132

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, DESIGN), (\*EXTRAVEHICULAR  
ACTIVITY, PROTECTIVE CLOTHING), SPACE ENVIRONMENTS, LIFE  
SUPPORT, CONFIGURATION, PROPELLANT TANKS, CONTROL  
SYSTEMS, HUMAN FACTORS ENGINEERING (U)  
IDENTIFIERS: \*SPACE SUITS (U)

SUCCESSFUL COMPLETION OF A DESIGN STUDY OF AN  
EXTRAVEHICULAR SPACE SUIT ASSEMBLY WITH AN INTEGRATED  
LIFE SUPPORT SYSTEM HAS LED TO THE FABRICATION AND  
EVALUATION OF A HUMAN FACTORS MOCKUP. THIS MOCKUP  
CONSISTS OF A TWO-PIECE HARD TORSO WITH SOFT ARMS AND  
LEGS, A FULL BUBBLE HELMET AND PRESSURE GLOVES  
COMPLETE THE PRESSURE SUIT SYSTEM. THE HARD TORSO  
IS A VOLUMETRIC REPRESENTATION OF AN INTEGRAL LIFE  
SUPPORT SYSTEM. IT ALSO CONTAINS AN OPERATIONAL  
COLD-GAS PROPULSION SYSTEM AND CONTROLS AND DISPLAY  
PANEL. SIXTEEN THRUSTERS PROVIDE ACCELERATIONS OF  
0.3 FT/SEC SQUARED IN THREE DEGREES OF TRANSLATION  
AND 10 TO 20 DEGREES OF ROTATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-718 327 6/17  
NAVAL AEROSPACE MEDICAL RESEARCH LAB PENSACOLA FLA

A TECHNIQUE FOR OPTIMAL FITTING OF FLIGHT  
HELMETS.

(U)

SFP 70 12P GREENE, JAMES W. ;  
REPT. NO. NAMRL-1118  
PROJ: MF12.524.005, A340-5314/561-B/1F12-52-4402  
MONITOR: NAVMED MF12.524.005-7008A-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EAR PROTECTORS, NAVAL AVIATION), (\*NOISE,  
ATTENUATION), (\*HELMETS, COMPATIBILITY), OPTIMIZATION,  
HUMAN FACTORS ENGINEERING, TEST METHODS, AUDIOMETRY,  
THRESHOLDS(PHYSIOLOGY), EARPHONES (U)  
IDENTIFIERS: COMFORT, \*FLIGHT CLOTHING, \*HELMETS (U)

ALTHOUGH FLIGHT HELMETS SELECTED FOR NAVY USE MAY  
POSSESS EXCEPTIONALLY GOOD NOISE ATTENUATION  
QUALITIES, MAXIMUM ATTENUATION MAY NOT ALWAYS BE  
REALIZED WHEN THE HELMET IS WORN, PARTICULARLY IF THE  
HELMET DOES NOT FIT. THE LACK OF A STANDARDIZED  
PROCEDURE FOR FITTING FLIGHT HELMETS OFTEN RESULTS IN  
A POOR COMPROMISE THAT SACRIFICES NOISE EXCLUSION FOR  
COMFORT. A PROCEDURE THAT INVOLVES THE USE OF A  
NOISE SOURCE AND AN AUTOMATIC RECORDING AUDIOMETER  
HAS BEEN DEVELOPED AS AN AID IN THE FITTING PROCESS.  
THE NOISE SOURCE ALLOWS THE AVIATOR TO DETECT  
ACOUSTICAL LEAKAGE AROUND HIS EARS SO THAT A BETTER  
FIT CAN BE EFFECTED. MASKED HEARING THRESHOLD  
LEVELS OBTAINED WITH THE HELMET'S EARPHONES MAY BE  
USED TO DEMONSTRATE IMPROVED PERFORMANCE.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-719 106 6/17 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CLOTHING (AVIATION).

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
DEC 70 23P  
REPT. NO. MTP-7-3-087  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (•FLIGHT CLOTHING, TEST METHODS),  
PROTECTION, HUMAN FACTORS ENGINEERING, ENVIRONMENTAL  
TESTS, VISUAL INSPECTION, LAUNDRY OPERATIONS, SURVIVAL  
KITS (U)  
IDENTIFIERS: COMFORT, •COMMON ENGINEERING TEST  
PROCEDURES, EVALUATION (U)

TEST PROCEDURES ARE DESCRIBED TO DETERMINE THE  
DEGREES AND FORMS OF PROTECTION, AND THE RELATIVE  
COMFORT AND FUNCTIONAL PERFORMANCE OF FLIGHT CREW  
MEMBER CLOTHING. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-719 112 6/17 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD.

BOOTS, CB PROTECTIVE.

(U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

JAN 68 18P

REPT. NO. MTP-8-2-041

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS),

(\*SHOES, TEST METHODS), PROTECTIVE CLOTHING,

IMPREGNATION, LEAKAGE (FLUID), DECONTAMINATION

(U)

IDENTIFIERS: \*COMMODITY ENGINEERING TEST PROCEDURES,

TOXIC AGENT PROTECTIVE CLOTHING

(U)

THE DOCUMENT PROVIDES TEST METHODS AND TECHNIQUES  
NECESSARY TO DETERMINE THE TECHNICAL PERFORMANCE AND  
SAFETY ASPECTS OF CB PROTECTIVE BOOTS.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-719 113 6/17 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

HOODS, PROTECTIVE.

(U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

JAN 68 26P  
REPT. NO. MTP-8-2-043

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS), ARMY  
PERSONNEL, BIOLOGICAL WARFARE AGENTS, CHEMICAL WARFARE  
AGENTS, BREATHING MASKS, TEST EQUIPMENT, PHOTOGRAPHY,  
COMPATIBILITY, ENVIRONMENTAL TESTS, PERSONNEL, MEDICAL  
EXAMINATION, LEAKAGE (FLUID), VISUAL INSPECTION,  
FLAMMABILITY

(U)

IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES,  
SDR (SMALL DEVELOPMENT REQUIREMENTS), TOXIC AGENT  
PROTECTIVE CLOTHING

(U)

THE DOCUMENT PROVIDES TEST METHODS AND TECHNIQUES  
NECESSARY TO DETERMINE THE TECHNICAL PERFORMANCE AND  
SAFETY ASPECTS OF THE TEST ITEM RELATIVE TO THE  
CRITERIA CITED IN APPLICABLE QUALITATIVE MATERIAL  
REQUIREMENTS (QMR'S), SMALL DEVELOPMENT  
REQUIREMENTS (SDR'S), TECHNICAL CHARACTERISTICS  
(TC'S), AND AS INDICATED BY THE PARTICULAR DESIGN  
AND TO DETERMINE THE TECHNICAL SUITABILITY OF THE  
TEST ITEM FOR SERVICE TEST. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-719 131 6/17 15/2 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ARCTIC ENVIRONMENTAL TEST OF CB PROTECTIVE  
CLOTHING. PROTECTIVE MASKS AND WINTERIZATION  
KITS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
JAN 70 12P  
REPT. NO. MTP-8-4-006  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE MASKS, TEST METHODS),  
(\*PROTECTIVE CLOTHING, TEST METHODS), COLD WEATHER  
TESTS, RELIABILITY, CHEMICAL PROPERTIES,  
MAINTAINABILITY, HUMAN FACTORS ENGINEERING, BIOLOGICAL  
WARFARE AGENTS, CHEMICAL WARFARE AGENTS, PROTECTIVE  
MASKS, ARCTIC REGIONS

(U)

IDENTIFIERS: TOXIC AGENT PROTECTIVE CLOTHING,  
\*ENVIRONMENTAL TEST PROCEDURES

(U)

THE PROCEDURES OUTLINED IN THIS MATERIEL TEST  
PROCEDURE ARE DESIGNED TO DETERMINE AND EVALUATE  
THE PERFORMANCE CHARACTERISTICS OF CB PROTECTIVE  
CLOTHING, PROTECTIVE MASKS AND WINTERIZATION KITS IN  
ARCTIC ENVIRONMENTAL CONDITIONS. PROCEDURES ARE  
ALSO INCLUDED WHICH ARE APPLICABLE TO SURVEILLANCE  
(5 YEARS) TESTING OF SUBJECT ITEMS.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-720 275 6/17  
IIT RESEARCH INST CHICAGO ILL

EXPLORATORY DEVELOPMENT OF PARTIAL PRESSURE  
HELMET AND MOBILITY JOINTS FOR EMERGENCY  
PRESSURE SUIT OUTFITS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 69-31 AUG 70,  
JAN 71 43P SLOWIK, JOZEF ; MARCUM, ALFRED  
; BURNS, MARVIN ;  
REPT. NO. IITRI-J6181-FR  
CONTRACT: F33615-69-C-1592  
PROJ: AF-7164, IITRI-J6181  
TASK: 716411  
MONITOR: AMRL TR-70-111

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*JOINTS), (\*HELMETS,  
JOINTS), MOBILITY, DACRON, DISTORTION, NETS, HIGH  
ALTITUDE

(U)

ANISOTROPIC DACRON NET PREPARED BY DISTORTION ON  
THE BIAS AND LOCKING WITH A POLYURETHANE SOLUTION WAS  
USED FOR EXPANDABLE PANELS ALONG WITH NON-EXPANDABLE  
FABRICS AND VOLUME TRANSFER BANDS TO FORM SEVERAL  
EXPERIMENTAL JOINTS. COMBINATIONS SHOWING PROPER  
FUNCTION IN A SINGLE PLANE WERE NOT FULLY ADAPTABLE  
TO MULTIPLE PLANE JOINTS WITHOUT RESORTING TO BULKY,  
RIGID PARTS. THE HELMET INCORPORATED A MANUALLY  
OPERATED PRESSURE VISOR, FACE-EAR SEALS, AND A MULTI-  
COMPARTMENTED BLADDER SYSTEM WHICH DOES NOT COVER THE  
CROWN OF THE HEAD THUS CANCELLING HELMET LIFTING  
FORCES. THE HELMET IS FUNCTIONAL AND HAS BEEN WORN  
AT 175 MM HG PRESSURE WITHOUT UNDUE DISCOMFORT.  
TOTAL WEIGHT AND BULK ARE LOW FOR A PRESSURE HELMET  
AND HIGH ALTITUDE TRIALS HAVE BEEN SUCCESSFUL. HEAD  
MOBILITY (LIMITED BY OMISSION OF A ROTARY BEARING  
AND SUIT-BIB OVERLAP), BETTER FACE-EAR SEALS, AND  
AUTOMATIC VISOR CLOSING WOULD BE ATTAINABLE IN A  
COORDINATED HELMET/SUIT SYSTEM DEVELOPMENT.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-720 827 6/17 15/5  
CLARK (DAVID) CO INC WORCESTER MASS

DESIGN AND FABRICATION OF A PASSIVELY  
PRESSURIZED SUIT. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 68-APR 70,  
JAN 71 28P PLESKUN, WALTER G. IRUSECKAS,

JOSEPH A. ;

CONTRACT: F33657-68-C-1663

PROJ: AF-7164

TASK: 716411

MONITOR: AMRL TR-70-120

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, HIGH ALTITUDE),  
PRESSURIZATION, FIRE RESISTANT TEXTILES, VALVES,  
RESPIRATION, TESTS, CARDIOVASCULAR DISEASES, HELMETS (U)

THE PURPOSE OF THE EXPERIMENTAL EFFORT WAS TO  
EVOLVE NEW DESIGNS AND MANUFACTURING TECHNOLOGY  
APPLICABLE TO HIGH ALTITUDE PRESSURE SUITS.  
EMPHASIS WAS PLACED ON DEVELOPMENT OF BLADDERS  
USING AN ELASTOMERIC COMPOUND WHICH WOULD HAVE  
EXCELLENT AIR RETENTION FOR EXTENDED PERIODS OF TIME,  
WOULD HAVE THE CAPABILITY TO EXPAND SUFFICIENTLY TO  
SERVE AS A REDUNDANT SEGMENT FOR FAILED ADJACENT  
BLADDERS AND WOULD BE ECONOMICAL TO FABRICATE.  
ADDITIONAL EMPHASIS WAS PLACED ON THE DEVELOPMENT  
OF A RESTRAINT COVERALL WHICH WOULD SATISFY THE  
REQUIREMENTS FOR PASSIVE VENTILATION, UNPRESSURIZED  
MAXIMUM MOBILITY, ACCEPTABLE PRESSURIZED MOBILITY,  
LONG TERM COMFORT UNPRESSURIZED, ADEQUATE SKIN  
PRESSURE DURING PRESSURIZATION AND LOWEST POSSIBLE  
WEIGHT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-722 774 13/12 6/17  
CORNELL AERONAUTICAL LAB INC BUFFALO N Y

FIRE FIGHTER'S EXPOSURE STUDY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL-NOV 70.  
DEC 70 90P GRAVES, KENNETH W. ;  
REPT. NO. CAL-HM-2972-Z-1  
CONTRACT: F33615-70-C-1715  
MONITOR: AGFSRS 71-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AVIATION FUELS, FIRES), (\*JET ENGINE  
FUELS, FIRES), (\*FIRE PROTECTIVE CLOTHING, DESIGN),  
THERMAL RADIATION, INFRARED RADIATION, WIND,  
CONVECTION(HEAT TRANSFER), MEASURING INSTRUMENTS, HEAT  
FLUX, FIRE SAFETY, AIRCRAFT FIRES, RESCUES (U)

EXPERIMENTAL FIRES FROM POOLS OF BURNING AIRCRAFT  
FUELS WERE INSTRUMENTED WITH HEAT METERS TO DETERMINE  
HEAT FLUX DISTRIBUTIONS FOR APPLICATION TO THE DESIGN  
OF PROTECTIVE CLOTHING FOR FIREFIGHTING PERSONNEL.  
THE SPECTRAL DISTRIBUTION OF INFRARED RADIATION  
EMITTED BY FIRES WAS ALSO MEASURED. CONDITIONS  
AFFECTING THE FIRES AND THE RESULTING HEAT EFFECTS  
THAT WERE STUDIED WERE WIND VELOCITY, FUEL POOL AREA,  
TIME OF BURNING, ORIENTATION AROUND THE FIRE RELATIVE  
TO WIND DIRECTION, DISTANCE FROM THE FIRE, AND AN  
EXTRANEOUS OBJECT IN A FIRE. A MEANS BY WHICH  
EVALUATION OF REFLECTIVE CLOTHING CAN BE MADE IS  
DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-722 857 6/11 6/17  
FLYING PERSONNEL RESEARCH COMMITTEE LONDON (ENGLAND)

A LABORATORY COMPARISON OF THREE METHODS OF  
PERSONAL CONDITIONING. (U)

JAN 71 42P ALLAN, J. R. ; ALLNUTT, M.  
F. ; HANSON, R. DE G. ; BEENY, M. ; SHORT, B. ;

REPT. NO. FPRC-1307

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH RAF  
INST. OF AVIATION MEDICINE, FARNBOROUGH  
(ENGLAND), REPT. NO. IAH-R497 AND JOINTLY WITH  
ROYAL AIRCRAFT ESTABLISHMENT, FARNBOROUGH  
(ENGLAND), REPT. NO. RAE-TR-70121, AD-884 467.

DESCRIPTORS: (\*FLIGHT CLOTHING, DESIGN), (\*PILOTS,  
STRESS(PHYSIOLOGY)), TACTICAL BOMBING, AIRCRAFT CABINS,  
THERMAL STRESSES, SIMULATION, GREAT BRITAIN (U)

TWELVE SUBJECTS WERE USED TO OBTAIN COMPARATIVE  
DATA BETWEEN A WATER COOLED, A CONVECTIVE AIR COOLED  
AND A REVERSE FLOW AIR COOLED PERSONAL CONDITIONING  
SYSTEM DURING LABORATORY SIMULATIONS OF A TYPICAL  
OPERATIONAL SORTIE IN A HOT CLIMATE. THE RESULTS  
GENERALLY FAVOURED THE WATER COOLED SYSTEM ON  
PHYSIOLOGICAL, BEHAVIOURAL AND SUBJECTIVE GROUNDS.  
THE RESULTS OF THIS LABORATORY TRIAL MAY NOT  
NECESSARILY TRANSFER TO REALISTIC OPERATING  
CONDITIONS AND FURTHER FIELD TESTING BOTH IN FLIGHT  
AND USING APPROPRIATE GROUND EQUIPMENT WILL BE  
REQUIRED BEFORE IT CAN BE SHOWN WHETHER THESE  
ADVANTAGES CAN BE REALISED. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-723 030 15/5 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CLOTHING (AVIATION).

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

MAR 71 34P

REPT. NO. MTP-7-2-087

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, TEST METHODS),  
MAINTENANCE, RELIABILITY, SAFETY, HUMAN FACTORS  
ENGINEERING, EXPOSURE(PHYSIOLOGY), ENVIRONMENTAL TEST(U)  
IDENTIFIERS: COMMODITY ENGINEERING TEST  
PROCEDURES (U)

THE DOCUMENT PROVIDES TEST METHODOLOGY AND TESTING  
TECHNIQUES NECESSARY TO DETERMINE THE TECHNICAL  
PERFORMANCE AND SAFETY CHARACTERISTICS OF AVIATION  
TOOLS AND ASSOCIATED ACCESSORIES AS DESCRIBED IN  
MATERIEL NEEDS (MN) AND TO DETERMINE THE ITEM'S  
SUITABILITY FOR SERVICE TESTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM08

AD-723 549 6/17 15/2  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

IMPREGNATION PLANT IMPROVEMENT TESTS.

(U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL NOTE.

JAN 58 18P NEHLSSEN, WILLIAM R. HALTON.

J. E. ;

REPT. NO. NCEL-TN-325

PROJ: NY-310-004-5

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, IMPREGNATION),  
(\*CHEMICAL WARFARE AGENTS, PROTECTIVE CLOTHING),  
TANKS(CONTAINERS), CHEMICALS, PROCESSING, DYES, LAUNDRY  
OPERATIONS (U)

THE OBJECT OF THE STUDY WAS TO IMPROVE CHEMICAL  
HANDLING PROCEDURES AND EQUIPMENT FOR USE IN  
CONVERTING LAUNDRY EQUIPMENT TO A CLOTHING  
IMPREGNATION UNIT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-724 020 6/17  
KANSAS STATE UNIV MANHATTAN COLL OF ENGINEERING

WATER COOLED HOOD AFFECTS CREATIVE  
PRODUCTIVITY.

(U)

69 SP KONZ, S. ; GUPTA, V. K. ;  
CONTRACT: F44620-68-C-0020  
PROJ: AF-9563  
MONITOR: AFOSR TR-71-1364

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN ASHRAE JNL., P40-43 JUL  
69.

DESCRIPTORS: (\*PERFORMANCE(HUMAN); \*PROTECTIVE  
(CLOTHING); (\*HELMETS, COOLING); STRESS(PHYSIOLOGY); BODY  
TEMPERATURE; SWEAT GLANDS; PULSE RATE (U)

THE EFFECT OF LOCALIZED COOLING OF THE HEAD WAS  
STUDIED IN A HEAT STRESS (100 F. 70% RH)  
ENVIRONMENT ON EIGHT MALE STUDENTS. PRODUCTIVITY  
ON A CREATIVE MENTAL TASK DECLINED 8% LESS WITH  
THE HOOD. RECTAL AND LIMB TEMPERATURE WERE NOT  
SIGNIFICANTLY AFFECTED BY THE HOOD BUT, WITH THE  
HOOD, THE HEAT TEMPERATURE RISE WAS 2 DEG F LESS.  
THE SWEAT RATE WHILE WEARING THE HOOD WAS  
SIGNIFICANTLY LESS. THE HEART RATE INCREASE WAS  
LOWER WITH THE HOOD. HEART BEAT VARIABILITY (AN  
INDEX OF STRESS) WAS AFFECTED BY THE HEAT AND, WITH  
THE HOOD, VARIABILITY DECREASED LESS AS WAS  
PREDICTED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-724 617 6/17 6/19  
NAVAL AIR DEVELOPMENT CENTER WARMINSTER PA AEROSPACE CREW  
EQUIPMENT DEPT

PHYSIOLOGICAL EVALUATION OF SUBJECTS EXPOSED  
TO A COLD WATER ENVIRONMENT WHILE WEARING  
DIFFERENT PROTECTIVE SUIT ASSEMBLIES. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
MAR 71 18P SANTA MARIA, LOUIS J. ;  
RADLIFF, MEREDITH H. ;  
REPT. NO. NADC-AC-7101  
PROJ: A340-5311/202-B/1F32-523-401

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, LOW TEMPERATURE),  
(\*PROTECTIVE CLOTHING, LOW TEMPERATURE), EFFICIENCY,  
UNDERWATER, ENVIRONMENT, PHYSIOLOGY, DESIGN, MATERIALS,  
TEMPERATURE, BODY TEMPERATURE, EXPOSURE (PHYSIOLOGY) (U)

THE PHYSIOLOGICAL RESPONSES OF TWO VOLUNTEER  
SUBJECTS EXPOSED TO AN EXTREME COLD WATER ENVIRONMENT  
(OC) WHILE WEARING THE 3/16 INCH CHLOROPRENE  
WET SUIT, 1/8 INCH CHLOROPRENE WET SUIT,  
AND THE POLYVINYL CHLORIDE WET SUIT WERE  
INVESTIGATED UNDER TWO CONDITIONS OF USE: CONSTANT  
IMMERSION-FLOTATION (COND I) AND IMMERSION-  
FLOTATION FOR A TWO-MINUTE PERIOD FOLLOWED BY RAFT  
OCCUPANCY (COND II). IN VIEW OF EXPOSURE DURATION  
RANGING FROM 0.5-1.0 HR AND FROM 2.0-3.0 HR UNDER  
CONDITIONS I AND II, RESPECTIVELY, THE RESULTS  
INDICATE THAT SURVIVAL AND TISSUE DAMAGE PROTECTION  
IS AFFORDED, WITHIN EXPECTED LIMITS OF TIME UNDER  
BOTH EMERGENCY CONDITIONS FOR SEARCH AND RECOVERY, BY  
ANY OF THE CLOTHING ASSEMBLIES TESTED. IT IS  
RECOMMENDED, THEREFORE, THAT THE 1/8 INCH  
CHLOROPRENE WET SUIT BE CONSIDERED AS THE MOST  
ACCEPTABLE ON THE BASIS OF SUCH PHYSICAL  
CHARACTERISTICS AS REDUCED WEIGHT AND BULK.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-724 648 6/17 11/7  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

THE BEHAVIOR OF PROTECTIVE UNIFORMS IN  
LARGE-SCALE SIMULATED FIRES.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

MAR 71 54P  
REPT. NO. C/PLCEL-TS-177  
PROJ: DA-1-0-024401-A-329  
MONITOR: USA-NLABS YR-71-40-CE

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ERRATA SHEET INSERTED.

DESCRIPTORS: (•FLIGHT CLOTHING, •HEAT RESISTANT  
MATERIALS), FIRE RESISTANT TEXTILES, MILITARY  
FACILITIES, TEST FACILITIES, JET ENGINE FUELS, FIRES,  
VISUAL INSPECTION, TEMPERATURE, SYNTHETIC FIBERS, ARMY  
RESEARCH (U)  
IDENTIFIERS: JP-4 FUEL, EVALUATION (U)

THE REPORT DESCRIBES A NEW TEST FACILITY DEVELOPED  
AT THE U. S. ARMY NATICK LABORATORIES FOR  
EXPOSING CLOTHED MANIKINS TO LARGE FUEL (JP-4)  
FIRES AND GIVES THE RESULTS OF EVALUATIONS MADE OF  
SEVERAL PROTECTIVE SYSTEMS DEVELOPED FOR HOT AND COLD  
WEATHER AVIATORS' UNIFORMS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-726 076 6/17 13/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

EFFICACY OF VENTILATING SYSTEMS.

(U)

70 9P VEGHTE, JAMES H. ;  
PROJ: AF-7222  
TASK: 722207  
MONITOR: AMRL TR-69-54

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN NASA. AMES RESEARCH  
CENTER PORTABLE LIFE SUPPORT SYSTEMS, NASA  
SP-234 P151-177 N.O.

DESCRIPTORS: (\*FLIGHT CLOTHING, VENTILATION),  
EQUILIBRIUM(PHYSIOLOGY), PHYSIOLOGY, HUMIDITY,  
TEMPERATURE, PERMEABILITY, EVAPORATION, PULSE RATE,  
SWEAT GLANDS, AEROSPACE MEDICINE

(U)

SEVERAL AIR-COOLED SYSTEMS AND ONE WATER-COOLED  
SYSTEM WORN UNDER FLIGHT CLOTHING WERE EVALUATED.  
THE SUBJECTS WERE EXPOSED TO AN ENVIRONMENT OF 43  
C/45 MM HG WATER VAPOR PRESSURE AT SEA LEVEL.  
SWEAT LOSS, BODY TEMPERATURE, AND HEART RATE  
MEASUREMENTS WERE TAKEN. ALL SYSTEMS WERE FOUND TO  
AMELIORATE DISCOMFORT WITH THE WATER-COOLED SYSTEM  
SHOWING SLIGHT ENHANCEMENT OVER AIR SYSTEMS.  
PROVISIONS FOR COOLING THE FACE DECREASED  
DISCOMFORT. OPTIMAL VENTILATING SYSTEMS ARE  
PROPOSED FOR PERMEABLE AND IMPERMEABLE CLOTHING.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-776 698 6/17 6/11  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

PROGRESS REPORT ON THE DAMAGE CONTROL SUIT  
SYSTEM.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUN 71 36P AUDET, NORMAN F. ;  
REPT. NO. TR-95, 5-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, DESIGN), (\*LIFE  
SUPPORT, PROTECTIVE CLOTHING), TEMPERATURE, CHEMICALS,  
HUMIDITY, RESPIRATION, OXYGEN, DETECTORS, TOXIC  
TOLERANCES, HEADGEAR, COMMUNICATION SYSTEMS, NAVAL  
RESEARCH

(U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT IS DEVELOPING A DAMAGE CONTROL SUIT  
SYSTEM TO PROTECT PERSONNEL IN HAZARDOUS CHEMICAL,  
HIGH TEMPERATURE-HUMIDITY, AND OXYGEN DEFICIENT  
ENVIRONMENTS. DATA INDICATE THE SYSTEM WILL PROVIDE  
LIFE SUPPORT FOR AN INDIVIDUAL COMPLETELY  
ENCAPSULATED FROM HIS ENVIRONMENT FOR A MAXIMUM OF 80  
MINUTES AT 140F, WHILE PERFORMING LIGHT ACTIVITY,  
AND FOR 120 MINUTES AT 70F, WHILE MODERATELY  
ACTIVE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-727 021 6/17  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA

PROTECTIVE SMOKE HOOD STUDIES:

(U)

DEC 70 66P MCFADDEN, ERNEST B. SMITH,  
ROGER C. I  
MONITOR: FAA-AM 70-20

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE COVERINGS, SMOKE),  
(\*PROTECTIVE MASKS, SMOKE), (\*FIRE PROTECTIVE CLOTHING,  
EFFICIENCY), RESCUES, EVACUATION, PHYSIOLOGY (U)  
IDENTIFIERS: \*PROTECTIVE HOODS (U)

THE REPORT DESCRIBES THE EVALUATION AND TESTING OF  
A HIGH-TEMPERATURE RESISTANT, TRANSPARENT, POLYIMIDE  
HOOD DESIGNED TO PROTECT AIRCRAFT PASSENGERS AND CREW  
FROM THE EFFECTS OF TOXIC FUMES, SMOKE AND FLAME  
RESULTING FROM AN AIRCRAFT ACCIDENT. AS A 'GET-ME-  
OUT' DEVICE, THE HOOD WAS DEVELOPED TO PROVIDE  
PROTECTION OF THE RESPIRATORY SYSTEM AND MAINTAIN THE  
OCCUPANT IN A CONSCIOUS AND MOBILE STATE SO THAT THE  
AIRCRAFT CAN BE EVACUATED BEFORE SMOKE AND HIGH  
TEMPERATURES RENDER THE CABIN ENVIRONMENT  
UNINHABITABLE. CONSISTING OF A SERIES OF  
INDEPENDENT STUDIES, THIS REPORT ENCOMPASSES  
CONTRIBUTIONS FROM THE FIELDS OF PHYSIOLOGY,  
PSYCHOLOGY, AND HUMAN FACTORS. THE GENERAL SMOKE  
HOOD CONCEPT IS EXAMINED WITH RESPECT TO  
ENVIRONMENTAL PROTECTION, VISION, HEARING, SAFETY  
BRIEFINGS, AND THE EFFECT OF THE HOOD UPON VACUATION  
EFFICIENCY. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-727 222 6/17  
WEBB ASSOCIATES YELLOW SPRINGS OHIO

PROTECTION OF AIRCREWS FROM HIGH  
TEMPERATURES; USE OF A WATER-COOLED GARMENT  
FOR HEAT BALANCE STUDIES IN MAN. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 71 11P WEBB, PAUL ;  
CONTRACT: F44620-70-C-0045  
PROJ: AF-9777  
MONITOR: AFOSR TR-71-1982

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, COOLING), HEAT  
TOLERANCE, BODY TEMPERATURE, HEAT PRODUCTION(BIOLOGY),  
PHYSIOLOGY, METABOLISM, FLIGHT, PERIODIC VARIATIONS,  
RHYTHM(BIOLOGY), THERMAL INSULATION (U)

A WATER-COOLED SUIT WAS DEVELOPED FOR USE AS A  
DIRECT CALORIMETER WITH ERROR OF APPROXIMATELY ONE  
PERCENT WHEN HEAT LOSS WAS MATCHED TO HEAT PRODUCTION  
OVER A FULL 24-HOUR METABOLIC CYCLE. THE NEW SUIT  
WAS COUPLED WITH A PREVIOUSLY DEVELOPED METABOLIC  
RATE MONITOR IN A SERIES OF HUMAN EXPERIMENTS. IT  
WAS SHOWN THAT DURING 30-35 CONTINUOUS HOURS OF  
MONITORING BODY HEAT CONTENT IS NOT CONSTANT, EVEN AT  
REST, AND THERE IS CONSTANT SWING OF HEAT STORAGE OF  
SOME MAGNITUDE; STORAGE IS GENERALLY TEN PERCENT OF  
METABOLIC RATE. SECONDLY, IT WAS FOUND THAT THERE  
ARE SINUSOIDAL RHYTHMS IN HEAT PRODUCTION AND HEAT  
LOSS, WHICH ARE MATCHED BUT OUT OF PHASE, AND THE  
PHASE SHIFT CAN EXPLAIN THE ESTABLISHED CIRCADIAN  
RHYTHM IN RECTAL TEMPERATURE. THESE DATA ARE OF  
CONSIDERABLE INTEREST TO USAF LABORATORIES STUDYING  
PHYSIOLOGICAL ADJUSTMENTS FOLLOWING FLIGHTS OVER  
SEVERAL TIME ZONES, CHANGES IN BIOLOGICAL RHYTHMS  
DURING PROLONGED FLIGHTS, AND IN DESIGNING NEW  
PROTECTIVE EQUIPMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-727 606 13/1 6/17  
NAVAL MEDICAL RESEARCH INST BETHESDA MD

DEVELOPMENT OF A HEATER-PUMP TO PROTECT A  
DIVER IN COLD WATER. (U)

DESCRIPTIVE NOTE: MEDICAL RESEARCH INTERIM REPT.,  
APR 71 22P EICHER, MAYNARD ; CONNOR,  
THOMAS J. ; WISEMAN, OSCAR M. ; LETO, FRANK C.  
; JR. ; TAUBER, JOHN F. ;  
PROJ: M4306.02  
MONITOR: NAVMED M4306.02-60108-3

UNCLASSIFIED REPORT

DESCRIPTORS: (•HEATERS, •UNDERWATER CLOTHING), PUMPS,  
HEATING (U)

IN AN EFFORT TO PROVIDE A MEANS OF KEEPING A DIVER  
WARM IN A COLD ENVIRONMENT FOR A USEFUL PERIOD OF  
TIME, A SERIES OF FIVE HEATER-PUMPS WAS PROGRESSIVELY  
DEVELOPED. THEY CIRCULATED HEATED WATER THROUGH A  
WELSON TUBING SUIT, WORN UNDER A NEOPRENE WET SUIT.  
IN EACH UNIT THE HOT WATER WAS PRODUCED IN A BOILER  
WITH A 750 WATT ELECTRIC IMMERSION HEATER AND PUMPED  
IN A CLOSED SYSTEM THROUGH THE SUIT. WITH  
EFFICIENCIES OF ABOUT 85 PERCENT, DIVER COMFORT WAS  
MAINTAINED IN A 4 DEGREES C WATER. THE HEATER-  
PUMPS WERE DESIGNED TO OPERATE ON 24 VOLTS AT A DEPTH  
OF 600 FEET. THEY WERE DIVER TESTED IN AN OPEN  
TANK AND WITH SIMULATED LOADS, RECORDING TEMPERATURES  
AND FLOW RATES. THE RESULTS WITH THESE PROTOTYPE  
UNITS INDICATED THE FEASIBILITY OF A LOW-COST,  
SUCCESSFUL, HEATER PUMP FOR EITHER BATTERY OR FOR  
UMBILICAL CABLE OPERATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-729 362 6/17 14/2  
ARMY AEROMEDICAL RESEARCH LAB FORT RUCKER ALA

THE TESTING OF THERMAL PROTECTIVE CLOTHING IN  
A REPRODUCIBLE FUEL FIRE ENVIRONMENT, A  
FEASIBILITY STUDY, (U)

JUN 71 114P ALBRIGHT, JOHN D. ;KNOX,  
FRANCIS S. , III ;DUBOIS, DAVID R. ;KEISER,  
GEORGE M. I  
REPT. NO. USAARL-71-24  
PROJ: DA-3-A-062110-A-819

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE PROTECTIVE CLOTHING, TEST  
FACILITIES), (\*TEST FACILITIES, DESIGN), THERMAL  
RADIATION, TEXTILES, BURNS, LIFE SUPPORT, AVIATION  
SAFETY, FLAMMABILITY, AVIATION FUELS, FEASIBILITY  
STUDIES (U)

THE REPORT SETS FORTH THE CONCEPTUAL DESIGN FOR A  
FACILITY INTENDED FOR DEVELOPMENT AND EVALUATION OF  
THERMAL PROTECTIVE CLOTHING IN A REPRODUCIBLE FUEL  
FIRE ENVIRONMENT. THE METHODS DEVELOPED RELATE  
THERMAL CHARACTERISTICS OF FABRICS TO BIOMEDICAL  
ASPECTS OF BURN PREVENTION. A NUMBER OF  
BIOENGINEERING PROBLEMS ARE IDENTIFIED, THE  
RESOLUTION OF WHICH IS EXPENSIVE AND TIME CONSUMING.  
IT IS CONCLUDED THAT CONSTRUCTION OF THE FACILITY  
DESIGNED IS TECHNICALLY FEASIBLE. DUE TO THE  
MAGNITUDE AND COMPLEXITY OF THE BIOENGINEERING  
PROBLEMS IDENTIFIED, AND BECAUSE OF ADVANCES IN  
LABORATORY TESTING METHODS, HOWEVER, CONSTRUCTION OF  
SUCH A FACILITY IS NOT CONSIDERED TO BE A PRUDENT  
EXPENDITURE OF PUBLIC FUNDS AT THIS TIME.  
OPERATIONALLY ORIENTED BIOENGINEERING/AEROMEDICAL  
EVALUATION OF THERMAL PROTECTIVE CLOTHING SYSTEMS  
REMAINS ESSENTIAL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-729 664 5/5  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 71 28P BEATTY, HUGH T. ; BERGHAGE,  
THOMAS E. ; CHANDLER, DONALD R. ;  
REPT. NO. NEDU-RR-7-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ANTHROPOMETRY, NAVAL PERSONNEL),  
(\*DIVING, NAVAL PERSONNEL), (\*UNDERWATER CLOTHING,  
DESIGN), DATA, STATISTICAL ANALYSIS, TABLES (U)

ANTHROPOMETRIC DATA FOR NAVY DIVERS WERE  
COLLECTED AND ANALYZED FOR MEAN, STANDARD DEVIATION,  
SKEWNESS AND KURTOSIS. THE DATA WERE ANALYZED BY  
COMPUTER PERCENTILES CALCULATED AND PRINTED OUT.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-730 711 6/7 13/10.1 6/17 5/5  
NAVAL SUBMARINE MEDICAL RESEARCH LAB GROTON CONN

HUMAN FACTORS EVALUATION OF SUBMARINE  
ESCAPE: II-A. TOP EGRESS WITH THE  
BRITISH SUBMARINE ESCAPE IMMERSION SUIT AND  
THE STEINKE HOOD. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
OCT 70 29P RYACK, BERNARD L. WALTERS,  
GARY B. I  
REPT. NO: SMRL-644  
PROJ: MF12.524.006  
MONITOR: NAVMED MF12.524.006-9025B-38

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-718 855.

DESCRIPTORS: (\*SUBMARINE ESCAPE, HUMAN ENGINEERING),  
(\*UNDERWATER CLOTHING, SUBMARINE ESCAPE), DECOMPRESSION  
SICKNESS, TIME, HATCHES, SUBMARINE PERSONNEL,  
CORRELATION TECHNIQUES, SEA RESCUE EQUIPMENT, TESTS (U)  
IDENTIFIERS: \*STEINKE HOODS, \*SUBMARINE ESCAPE  
SUITS (U)

THE BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT (SEIS) WHICH PROVIDES THERMAL  
PROTECTION AND THE STEINKE HOOD WHICH DOES NOT,  
WERE EVALUATED FOR SINGLE-MAN AND GROUP ESCAPE (2-  
AND 3-MAN TEAMS) FROM A SIMULATED TOP EGRESS  
UNITED STATES NAVY ESCAPE TRUNK. FOR BOTH  
ESCAPE APPLIANCES, EGRESS TIME INCREASED LINEARLY AS  
A FUNCTION OF TEAM SIZE. THREE-MAN TEAMS AND TWO-  
MAN TEAMS ESCAPED FASTER WITH THE SEIS THAN WITH  
THE STEINKE HOOD; THERE WAS NO DIFFERENCE FOR  
ONE-MAN ESCAPES. SINGLE-MAN ESCAPE TIMES WITH THE  
SEIS WERE COMPARABLE TO THOSE OBTAINED BY THE  
BRITISH. WHEN COMPARED WITH SIDE AND TUBE  
EGRESS, TOP EGRESS OFFERS A SUBSTANTIAL REDUCTION IN  
ESCAPE TIME AND THEREFORE IN TOTAL BOTTOM TIME.  
SAFE ESCAPES FROM DEPTHS IN ACCESS OF 450 FEET BY  
TEAMS OF MORE THAN TWO MEN ARE FEASIBLE FROM A TOP  
HATCH CONFIGURATION BUT ARE NOT POSSIBLE FROM A SIDE  
OR TUBE EGRESS CONFIGURATION. A SUBMARINE ESCAPE  
SYSTEM EMPLOYING TOP EGRESS AND THE EXPOSURE  
PROTECTION OF THE SEIS IS RECOMMENDED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM08

AD-731 556 6/17  
WELSON AND CO INC HARTFORD CONN

A ROCKET PROPELLANT HANDLER'S SUIT FOR  
PROTECTION FROM CHLORINE TRIFLUORIDE AND  
ELEMENTAL FLUORINE. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. SEP 69-OCT 70,  
AUG 71 60P MARTONE, JOSEPH A. IBERGEN,

GAIL A. I

CONTRACT: F04611-69-C-0102

PROJ: AF-3058

MONITOR: AFRPL TR-71-44

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*LIQUID ROCKET  
OXIDIZERS), (\*FLUORINE, PROTECTIVE CLOTHING),  
DEGRADATION, CHLORINE COMPOUNDS, FLUORIDES, HALOGENATED  
HYDROCARBONS, TEXTILES, LIQUEFIED GASES (U)  
IDENTIFIERS: \*CHLORINE FLUORIDE (CLF3), CHLORINE  
FLUORIDES, FLUORINATED POLYMERS (U)

EXTREMELY POWERFUL AND HIGHLY TOXIC OXIDIZERS SUCH  
AS FLUORINE (F2) AND CHLORINE TRIFLUORIDE  
(CLF3) ARE CURRENTLY BEING STUDIED AT THE AIR  
FORCE ROCKET PROPULSION LABORATORY. A  
PROTOTYPE PROPELLANT HANDLER'S SUIT FOR PROTECTION  
AGAINST GASEOUS FLUORINE AND LIQUID CHLORINE  
TRIFLUORIDE HAS BEEN DEVELOPED AND OPERATIONALLY  
TESTED. THE EXPOSED COMPONENTS OF THIS GARMENT ARE  
MADE OF PERFLUOROPOLYMERS AND STAINLESS STEEL. THE  
COMPLETE SUIT AND SAMPLE COMPONENTS WERE EXPOSED TO  
BOTH GASEOUS FLUORINE AND LIQUID CHLORINE  
TRIFLUORIDE. THE SUIT REACTED WITH LIQUID CHLORINE  
TRIFLUORIDE AND THEREFORE FAILED TO PASS THE  
OPERATIONAL TEST. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-732 194 6/17  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

CENTRIFUGE VALIDATION OF A TACTILE 'G-  
LIMIT' WARNING DEVICE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 71 10P THORBURN, DAVID E. ;  
REPT. NO. AMRL-TR-71-80  
PROJ: AF-7184  
TASK: 718410

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, WARNING SYSTEMS), (\*JET  
FIGHTERS, GRAVITY), SOLENOIDS, PULSE SYSTEMS, TESTS,  
FLIGHT TESTING, HUMAN ENGINEERING (U)

THE PURPOSE OF THE EXPERIMENT WAS TO EVALUATE THE  
EFFECTIVENESS OF A TACTILE, PULSATING, WARNING SIGNAL  
UNDER G-LOAD CONDITIONS. SUBJECTS WERE REQUIRED  
TO RESPOND TO A TACTILE PULSATING SIGNAL IN THEIR  
ANTI-G SUIT WHILE UNDER VARYING G LOADS BY  
PULLING A TRIGGER ON THEIR CONTROL STICK. THE  
TACTILE 'G-LIMIT' WARNING PULSE PROVED TO BE A VERY  
EFFECTIVE SIGNALING DEVICE. NOT ONE WARNING SIGNAL  
AT ANY FREQUENCY WAS MISSED BY ANY SUBJECT. ONE  
SUBJECT EVEN REPORTED FEELING THE SIGNAL AFTER HE HAD  
BLACKED OUT WHICH POINTS OUT THE OBVIOUS ADVANTAGE OF  
A TACTILE WARNING IN NOT REQUIRING A PILOT VISUAL OR  
EVEN AUDIO ATTENTION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-732 429 11/5 6/17 13/12  
ARMY AEROMEDICAL RESEARCH LAB FORT RUCKER ALA

ENGINEERING TEST OF LIGHTWEIGHT UNDERWEAR OF  
THE WINTER FLIGHT CLOTHING SYSTEM:  
THERMAL PROTECTION, (U)

JUN 71 46P KNOX, FRANCIS S. , III;  
MCCAHAN, GEORGE R. , JR.; WACHTEL, THOMAS L. ;  
TREVETHAN, WALTER P. ; MARTIN, ANDREW S. ;  
REPT. NO. USAARL-71-19  
PROJ: DA-3-A-062110-A-819

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEXTILES, \*FIRE SAFETY), (\*UNDERWEAR,  
THERMAL PROPERTIES), (\*FLIGHT CLOTHING, UNDERWEAR), JET  
ENGINE FUELS, BURNS, TESTS, ARMY RESEARCH, HEAT-  
RESISTANT MATERIALS. (U)  
IDENTIFIERS: NOMEX FABRIC, THERMAL PROTECTION. (U)

THE REPORT DESCRIBES THE USE OF A BIOASSAY  
TECHNIQUE TO EVALUATE THE FIRE RESISTANT AND THERMAL  
PROTECTION CAPABILITIES OF THE LIGHTWEIGHT UNDERWEAR  
OF THE ARMY WINTER FLIGHT CLOTHING SYSTEM.  
SAMPLES OF FABRICS WERE MOUNTED ON A TEMPLATE AND  
HELD IN CONTACT WITH THE SIDE OF A PIG. THUS  
PROTECTED, THE PIG WAS EXPOSED TO A FLAME SOURCE  
CALIBRATED TO SIMULATE A WELL DEVELOPED JP-4 FIRE.  
EVALUATION OF RESULTANT SKIN BURNS SHOWS THAT NONE  
OF THE FABRIC SYSTEMS, AS EVALUATED, MEET THE  
ESSENTIAL REQUIREMENT OF 10 SECONDS PROTECTION.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-733 312 6/17  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

INVESTIGATION OF METHODS FOR IMPROVING THE  
FRICTIONAL PROPERTIES OF RUBBER COMPOUNDS  
USED IN FOOTWEAR.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 71 39P MAHONEY, PATRICK J. ;  
REPT. NO. C/PLSEL-88  
PROJ: DA-1-T-01101-A-91-A  
TASK: 1-T-01101-A-91-A-C7  
MONITOR: USA-NLABS TR-72-2-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHOES, RUBBER), (\*PROTECTIVE CLOTHING,  
FRICTION), SURFACES, POLYMERS, ADDITIVES, MOISTURE,  
HARDNESS, SKIDDING, TOLERANCES(MECHANICS), DESIGN,  
COMPOSITE MATERIALS  
IDENTIFIERS: FOOTWEAR

(U)

(U)

EFFORTS TO IMPROVE FRICTIONAL QUALITIES ENTAILED  
THE TESTING OF VARIOUS TREAD DESIGNS, ADDITIVE  
MATERIALS SUCH AS CORK AND COTTON FLOCK, COMPOSITE  
SPECIMENS, AND CHanneLED AND SIPED SPECIMENS. TESTS  
WERE ALSO CONDUCTED AT ROOM TEMPERATURE AND IN SOME  
CASES AT 0F. THE DATA OBTAINED SHOW (1)  
CHANGES IN TREAD DESIGN, COMPOSITES AND COARSE  
ADDITIVE MATERIALS ARE INEFFECTIVE IN IMPROVING  
FRICTION ON SMOOTH SURFACES; (2) SIPING OF FLAT  
SPECIMENS SHOWED SLIGHT IMPROVEMENT OF FRICTION ON  
WET SURFACES; (3) COMPOUNDS THAT RESIST HARDENING  
AT 0F SHOW BETTER RETENTION OF FRICTION AT THAT  
TEMPERATURE; AND (4) THE ORDER OF SKID RESISTANCE  
OF SEVERAL COMPOUNDS CHANGES WHEN TESTED ON A  
DIFFERENT SURFACE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-734 136

6/17

NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

PHYSIOLOGICAL EVALUATION OF A COMMERCIALY  
AVAILABLE ABANDON-SHIP SURVIVAL SUIT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

NOV 71

25P

SHAMPINE, JAMES C. REINS,

DALE A. :

REPT. NO. TR-97, 1-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXPOSURE SUITS, EFFICIENCY), FLOTATION,  
TEMPERATURE, TOLERANCES(PHYSIOLOGY), NAVAL PERSONNEL,  
LEAKAGE(FLUID), WATER, TEST METHODS, WEIGHT, NAVAL  
RESEARCH

(U)

NAVY CLOTHING AND TEXTILE RESEARCH UNIT  
(NCTPU) PERSONNEL HAVE TESTED A COMMERCIALY  
AVAILABLE ABANDON-SHIP SURVIVAL SUIT IN WATER AT  
35F TEMPERATURE, WHICH IS COMPARABLE TO THAT FOUND  
IN VARIOUS OCEANS THROUGHOUT THE WORLD. TEST  
RESULTS INDICATE THAT THIS SUIT WILL GIVE PROTECTION  
FROM EXPOSURE TO COLD WATER FOR PERIODS OF 13 HOURS  
AND MORE WHEN WORN OVER ANY OF THE ENSEMBLES STUDIED  
DURING THIS TEST PROVIDING NO OTHER STRESSES ARE  
PRESENT WHICH COULD INFLUENCE THE USER'S TOLERANCE  
TIME. THIS SUIT CAN BE DONNED QUICKLY BUT CANNOT  
BE WORN OVER BULKY COLD-WEATHER CLOTHING.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-735 377 6/11 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

DEVELOPMENT AND EVALUATION OF AN OXYGEN-  
SENSING WARNING DEVICE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
DEC 71 33P AUDET, NORMAN F. ; ORNER,  
GEORGE M. I  
REPT. NO. TR-98, 6-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, DESIGN), (\*SENSORS,  
\*OXYGEN), NAVAL RESEARCH, ELECTRONIC EQUIPMENT, METERS,  
RELIABILITY, ACCURACY (U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT HAS EVALUATED AN OXYGEN-SENSING WARNING  
DEVICE, DEVELOPED BY BECKMAN INSTRUMENTS, INC.,  
TO BE USED AS A SAFETY FEATURE IN A DAMAGE  
CONTROL SUIT SYSTEM (DCSS) PRESENTLY UNDER  
DEVELOPMENT. THE O2 WARNING DEVICE, WHICH  
EMPLOYS A POLAROGRAPHIC OXYGEN SENSOR IN CONJUNCTION  
WITH CONTROL ELECTRONICS AND A VISUAL OUTPUT,  
PROVIDES A VISUAL WARNING IN THE EVENT OXYGEN  
CONCENTRATIONS IN THE DCSS ARE ABOVE OR BELOW  
CERTAIN PRESELECTED THRESHOLDS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-737 099 15/5 11/5  
FABRIC RESEARCH LABS INC DEDHAM MASS

DEVELOPMENT OF THERMALLY DURABLE COATED  
FABRICS FOR USE IN FLIGHT GLOVES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 69-DEC 70,  
SEP 71 85P SKELTON, JOHN IKASWELL, ERNEST  
R. I  
CONTRACT: F33657-70-C-0152  
MONITOR: ASD TR-71-47

UNCLASSIFIED REPORT

DESCRIPTORS: (GLOVES, THERMAL STABILITY), (FLIGHT  
CLOTHING, FIRE RESISTANT MATERIALS), FLIGHT CREWS,  
EXPERIMENTAL DESIGN, COATINGS, SHRINKAGE, HAZARDS,  
PERFORMANCE (HUMAN)

(U)

THE FLIGHT GLOVES CURRENTLY SUPPLIED TO AIR  
FORCE FLIGHT CREW MEMBERS PROVIDE SOFTNESS, TACTILE  
RESPONSE, GRIPPING POWER AND DURABILITY. BUT IN  
CONTACT WITH FLAME OR IN HEATED ENVIRONMENTS, THEIR  
LEATHER BURNS, SHRINKS VIOLENTLY, AND BECOMES STIFF  
AND BRITTLE. BECAUSE OF POTENTIAL DANGER, AN  
EFFORT IS REPORTED TO DEVELOP MATERIALS WITH  
MECHANICAL PERFORMANCE CHARACTERISTICS SIMILAR TO  
THOSE OF LEATHER, BUT WHICH ARE FLAMEPROOF AND  
THERMALLY STABLE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-737 720 6/17 13/1  
WESTINGHOUSE ELECTRIC CORP PITTSBURGH PA

THERMOELECTRIC HEATING AND VENTILATING  
SYSTEM.

(U)

DESCRIPTIVE NOTE: FINAL REPT. OCT 69-AUG 71,

NOV 71 36P BERNARD, A. M. I

CONTRACT: DAAG17-70-C-0044

PROJ: DA-1-J-062110-AJ-33

MONITOR: USA-NLABS.C/PLSEL

TR-72-26-CE,91

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEMPERATURE  
CONTROL), (\*AIR CONDITIONING EQUIPMENT,  
\*THERMOELECTRICITY), (\*HEATING ELEMENTS, PROTECTIVE  
CLOTHING), FUEL METERS, FUEL TANKS, PACKAGING,  
PERFORMANCE(ENGINEERING)

(U)

IDENTIFIERS: THERMOELECTRIC POWER GENERATION

(U)

MODIFICATIONS AND IMPROVEMENTS INCORPORATED INTO A  
THERMOELECTRIC HEATING AND VENTILATING SYSTEM ARE  
DESCRIBED. THE THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM IS DESIGNED TO PROVIDE A FLOW OF  
TEMPERATURE REGULATED AIR FOR USE IN HEATING OR  
VENTILATING A SPECIALLY DESIGNED MILITARY CLOTHING  
ENSEMBLE. THE SYSTEM WEIGHS TEN POUNDS UNFUELED  
AND REQUIRED 0.26 POUNDS OF FUEL FOR EACH HOUR OF  
OPERATION. EIGHTEEN C.F.M. OF AIR (S.T.P.  
CONDITIONS) AT FOUR INCHES WATER COLUMN PRESSURE IS  
DELIVERED FOR USE IN KEEPING AN INDIVIDUAL IN THERMAL  
BALANCE WHEN OPERATING IN EXTREME ENVIRONMENTS (-  
40F TO +110F) OR WHEN EXPOSED TO HAZARDS.  
THE ELECTRICAL POWER REQUIRED TO OBTAIN THE FLOW OF  
AIR IS SUPPLIED BY A THERMOELECTRIC GENERATOR WHICH  
CONVERTS THERMAL ENERGY DIRECTLY INTO ELECTRICAL  
ENERGY. THE THERMAL ENERGY IS DERIVED FROM THE  
COMBUSTION OF LIQUID MILITARY FUELS: LEADED GASOLINE,  
KEROSENE, JP-4 AND DIESEL FUELS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-738 088 6/17  
MAUCH LABS INC DAYTON OHIO

EXPERIMENTAL SPACE WORKER'S GARMENT AND  
HELMET ASSEMBLY.

(U)

DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT.,  
MAR 72 23P MARCUM, A. L. MAUCH, H.

A. I  
CONTRACT: AF 33(657)-8095  
PROJ: AF-6301  
TASK: 630104  
MONITOR: AMRL TDR-64-37

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED MAY 64.  
SUPERSEDES AD-351 372.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, DESIGN), (\*SPACE  
ENVIRONMENTS, PROTECTIVE CLOTHING), PRESSURIZATION,  
THERMAL PROPERTIES, PHOTOGRAPHS, PRESSURE SUITS, GLOVES,  
HELMETS, MOBILITY, MATERIALS, NYLON, SYNTHETIC RUBBER(U)

A NEW TECHNIQUE FOR PRESSURIZATION AND THERMAL  
CONTROL IN A SPACE WORKERS GARMENT HAS BEEN  
INVESTIGATED. THE GOAL WAS TO DESIGN AND FABRICATE  
COMPLETE COVERALLS AND HELMET THAT WOULD CONSIDER THE  
SPACE ENVIRONMENT AND ACHIEVE PHYSIOLOGICAL  
PROTECTION WITH EXCEPTIONAL RELIABILITY AND A MINIMUM  
OF COMPLEMENTARY SYSTEMS. THE COVERALLS UTILIZES  
MECHANICAL COUNTERPRESSURE APPLIED BY AN INTEGUMENT  
OF CLOSED CELL MATERIAL CONFINED WITHIN A RESTRAINING  
GARMENT. THERMAL EQUILIBRIUM IS TO BE ACHIEVED BY  
ALLOWING NATURAL PHYSIOLOGICAL PROCESSES TO CONTROL  
THE EVAPORATION OF PERSPIRATION INTO THE VACUUM OF  
SPACE. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-738 822 6/17  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

COLD WATER PROTECTION UNDER FIELD  
CONDITIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 53 15P WOLFE, T. R. IDWYER, U. V.,  
JR;  
REPT. NO. NEDU-FORMAL-3-53

UNCLASSIFIED REPORT

DESCRIPTORS: (•UNDERWATER CLOTHING, EFFICIENCY),  
(•PROTECTIVE CLOTHING, LOW TEMPERATURE), THERMAL  
INSULATION, DIVING, BODY TEMPERATURE

(U)

ELEVEN RUNS WERE MADE FOR THIS EVALUATION, ALL WITH  
THE SUBJECTS IMMERSED BUT NOT SUBMERGED IN 30F  
WATER. FOUR RUNS WERE MADE UNDER RESTING  
CONDITIONS, AND FOUR UNDER SWIMMING CONDITIONS, TO  
TEST VARIOUS TYPES OF INSULATING UNDERCLOTHING WORN  
BENEATH THE STANDARD SWIM SUIT. IN ADDITION, THREE  
DIVES WERE MADE UNDER SWIMMING CONDITIONS TO TEST  
THREE TYPES OF INSULATING SWIM SUITS. THE FOUR  
UNDERCLOTHING MATERIALS WERE: 1/8 IN. FLAT  
ENSOLYTE, 1/4 IN. FLAT ENSOLYTE, 1/4 IN. BUTTON  
ENSOLYTE, AND ONE SUIT OF 100% WOOL UNDERWEAR.  
THE THREE SWIM SUIT MATERIALS WERE: 1/4 IN. FLAT  
ENSOLYTE, 1/4 IN. FLAT CHEMICALLY BLOWN NEOPRENE, AND  
1/4 IN. FLAT MECHANICALLY BLOWN LATEX.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-738 981 6/17

TEXAS A AND M UNIV COLLEGE STATION DEPT OF INDUSTRIAL  
ENGINEERING

EFFECT OF SAFETY GLOVES ON SIMULATED WORK  
TASKS.

(U)

DESCRIPTIVE NOTE: RESEARCH REPT..

DEC 70 69P WEIDMAN, BRENT H. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MASTER'S THESIS.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TESTS), (\*GLOVES,  
SELECTION), SAFETY, LABOR, LEATHER, COTTON, SYNTHETIC  
RUBBER, POLYVINYL CHLORIDE, SIMULATION,  
PERFORMANCE(HUMAN)

(U)

THE INCREASING DEMAND BEING PLACED ON THE HUMAN  
HAND TO FUNCTION IN NEW ENVIRONMENTS REQUIRES  
EXAMINATION OF HOW PERFORMANCE IS AFFECTED BY THE  
REQUIRED SAFETY GLOVES. THE OBJECTIVE IN THIS  
RESEARCH IS TO HELP DETERMINE WHICH SAFETY GLOVE OR  
GLOVE TYPES ARE BEST SUITED FOR PARTICULAR WORK  
SITUATIONS WHEN THERE IS A CHOICE IN THE TYPE OF  
SAFETY GLOVE WHICH WILL SATISFY THE SAFETY  
REQUIREMENTS. THE PERFORMANCE OF TEN SUBJECTS  
PERFORMING FIVE SIMULATED WORK TASKS UNDER FIVE GLOVE  
CONDITIONS IS EXAMINED IN THIS REPORT. THE FIVE  
GLOVE CONDITIONS CONSIST OF BAREHAND AND LEATHER,  
TERRY CLOTH, NEOPRENE, AND PVC GLOVES.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-739 695 14/2 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

HYDROSPACE SIMULATOR FACILITY FOR MATERIALS  
TESTING. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
FEB 72 34P AUDET, NORMAN F. ;  
REPT. NO. TR-99: 10-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEST FACILITIES, \*UNDERWATER CLOTHING),  
DEEP SUBMERGENCE, SIMULATORS, THICKNESS, THERMAL  
CONDUCTIVITY, DEFORMATION, HYDROSTATIC PRESSURE (U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT (NCTRU) DEVELOPED A HYDROSPACE SIMULATOR  
FACILITY FOR TESTING MATERIAL PROPERTIES AT SEA  
DEPTHS TO 1,000 FSW. THE FACILITY CONTAINS THREE  
TESTERS TO STUDY MATERIAL THICKNESS, STRETCH-FLEX,  
AND THERMAL CONDUCTANCE PROPERTIES FROM NORMAL  
AMBIENT PRESSURES TO 1,000 FSW. THE EQUIPMENT  
COMPLEX ALSO INTEGRATES THE GAS CONTROL AND  
INSTRUMENTATION HARDWARE, TESTERS, AND PRESSURE  
CHAMBER EQUIPMENT NECESSARY FOR STUDYING THE MATERIAL  
PROPERTIES OUTLINED. THE MATERIAL PROPERTIES WHICH  
CAN BE STUDIED WITH THIS FACILITY ARE OF SIGNIFICANT  
IMPORTANCE IN THE DEVELOPMENT AND/OR SCREENING OF  
MATERIALS SUITABLE FOR DEEP SEA SWIMMERS' SUITS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-740 738 6/17  
EDGEWOOD ARSENAL MD

EVAPORATIVE COOLING OF MEN IN WET  
CLOTHING.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. MAR-AUG 71,  
MAR 72 24P CRAIG, F. N. ;  
REPT. NO. EA-TR-4629  
PROJ: DA-1-W-662710-AD-25  
TASK: 1-W-662710-AD-2501

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, COOLING),  
EVAPORATION, PERSPIRATION, MOISTURE, HEAT, HUMIDITY,  
ATROPINE, DOSAGE, EXPOSURE (PHYSIOLOGY), BODY  
TEMPERATURE, SAFETY, EXERCISE (PHYSIOLOGY)  
IDENTIFIERS: CHOLINESTERASE INHIBITORS, \*EVAPORATIVE  
COOLING

(U)

(U)

THREE GROUPS OF MEN WEARING THE CBR PROTECTIVE  
UNIFORM WERE EXPOSED TO SIX CONDITIONS OF VARYING  
HEAT, HUMIDITY, WIND, EXERCISE, AND INITIAL WATER  
CONTENT OF THE CLOTHING. EACH CONDITION WAS  
REPEATED WITH AND WITHOUT A 2-MG DOSE OF ATROPINE  
SULFATE. IN TROOPS WEARING THE CBR PROTECTIVE  
UNIFORM WHO INJECT A 2-MG DOSE OF ATROPINE INTO  
THEMSELVES ON THE MISTAKEN ASSUMPTION OF AN EXPOSURE  
TO AN ANTICHOLINESTERASE AGENT, THE RISE IN RECTAL  
TEMPERATURE CAUSED BY THE INHIBITION OF SWEATING BY  
ATROPINE CAN BE KEPT WITHIN SAFE LIMITS IF EXERCISE  
IS AVOIDED AND THE CLOTHING IS WET WITH SWEAT AT THE  
TIME OF INJECTION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-742 816 6/17 13/2  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

FUNCTIONAL SPECIAL CLOTHING FOR BUILDERS.

(U)

JAN 72 IIP SHIBANOV, N. I  
REPT. NO. FSTC-HT-23-368-71  
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF STROIKAKH ROSSII  
(USSR) N7 1970.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, CONSTRUCTION),  
CLIMATE, PERFORMANCE(HUMAN), PRODUCTION, FIRE PROTECTIVE  
CLOTHING, HEAT RESISTANT MATERIALS, COLD WEATHER TESTS,  
TROPICAL TESTS, ENVIRONMENTAL TESTS, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

SPECIAL PURPOSE PROTECTIVE CLOTHING FOR WORKMEN IN  
VARIOUS TYPES OF EMPLOYMENT, PARTICULARLY  
CONSTRUCTION ENGINEERING PERSONNEL, IS NECESSARY FOR  
PROFICIENT PERFORMANCE OF PRODUCTION OPERATIONS.  
THE REPORT DISCUSSES PROTECTIVE CLOTHING TO BE USED  
BY THOSE IN THE BUILDING INDUSTRY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-746 037 6/17  
DEFENCE RESEARCH INFORMATION CENTRE ORPINGTON  
(ENGLAND)

CALCULATION OF THE THERMAL RESISTANCE OF THE  
AIR LAYERS IN AIR-PERMEABLE CLOTHING. (U)

JUL 72 9P YANKELEVICH, V. I. ;  
REPT. NO. DRIC-TRANS-2717, DRIC-BR-300094

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF IZVESTIYA VYSSHIKH  
UCHEBNYKH ZAVEDENII. TEKHNLOGIYA TEKSTILNOI  
PROMYSHLENNOSTI (USSR) N2 P111-115 1971, BY M. V.  
MIDDLETON.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, THERMAL INSULATION),  
HEAT TRANSFER, THERMAL CONDUCTIVITY, CLOTHING, AIR,  
PERMEABILITY, MATHEMATICAL ANALYSIS, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE THERMAL RESISTANCE OF THE AIR LAYERS IN  
CLOTHING WHICH ALLOWS AIR TO PERMEATE THROUGH IT WAS  
INVESTIGATED. THE METHOD DESCRIBED FOR CALCULATING  
THE THERMAL RESISTANCE OF AIR-PERMEABLE ARTICLES  
MAKING ALLOWANCE FOR THE THERMAL RESISTANCE OF THE  
AIR LAYER YIELDS RESULTS CLOSE TO THE EXPERIMENTAL  
ONFS. THIS MAKES POSSIBLE THE RELIABLE DESIGN OF  
HEAT PROTECTIVE CLOTHING FOR ANY GIVEN CONDITIONS OF  
WORK OR CLIMATE. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-746 159 11/5 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

DEVELOPMENT OF AN INTEGRAL, NEOPRENE-COATED,  
ALUMINIZED, ASBESTOS CLOTH FOR FIRE  
FIGHTERS' SHIPBOARD COVERALLS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 72 21P KUPFERMAN, ZELIG I  
REPT. NO. TR-103, 4-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, FIRE RESISTANT  
TEXTILES), (\*SHIP FIRES, NAVAL PERSONNEL), ASBESTOS,  
CLOTHING, ALUMINUM COATINGS, WEAR RESISTANCE, WEIGHT,  
FLEXURAL STRENGTH, SYNTHETIC RUBBER, TEST METHODS, NAVAL  
RESEARCH (U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT (NCTRU) HAS DEVELOPED AN IMPROVED, NEOPRENE-  
COATED, ALUMINIZED, 1.2-POUND ASBESTOS  
(UNDERWRITER'S GRADE) CLOTH TO REPLACE THE  
NEOPRENE-COATED, ALUMINIZED, 11-OUNCE, GLASS/  
ASBESTOS, COTTON FABRIC FOR USE IN SHIPBOARD  
FIREFIGHTER'S COVERALLS. IN PRIOR TESTING, THE  
NEOPRENE-COATED, ALUMINIZED, 1.2-POUND ASBESTOS CLOTH  
DEMONSTRATED SIGNIFICANT IMPROVEMENTS OVER THE  
NEOPRENE-COATED, ALUMINIZED, 11-OUNCE, GLASS/  
ASBESTOS, COTTON FABRIC IN BOTH DURABILITY OF THE  
BASIC CLOTH AND ABRASION RESISTANCE OF THE ALUMINUM  
COATING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-747 276 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

EVALUATION OF HEAT LOSS FROM NAVY DIVERS' WET SUIT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 72 24P REINS, DALE A. ; SHAMPINE,  
JAMES C. ;  
REPT. NO. TR-102, 4-70

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, THERMAL ANALYSIS),  
(\*EXPOSURE SUITS, HEAT TRANSFER), SEA RESCUE EQUIPMENT,  
EXPANDED PLASTICS, SYNTHETIC RUBBER, BODY TEMPERATURE,  
SEA WATER, FLUID FLOW, SAFETY (U)

IN A SERIES OF OVER 200 TESTS, SUBJECTS WORE  
STANDARD, 3/16 INCH, CLOSED-CELL NEOPRENE-FOAM, AIR-  
SEA RESCUE SUITS IN WATER OF 55, 45, AND 35 DEG. F.  
THE TESTS WERE DESIGNED TO IDENTIFY AREAS OF THE  
BODY WHERE MAJOR HEAT LOSSES OCCUR. OTHER  
PHYSIOLOGICAL PARAMETERS WERE MONITORED TO ASSURE THE  
PHYSICAL SAFETY OF TEST SUBJECTS WHILE BODY  
TEMPERATURE AND METABOLIC RATES WERE MEASURED.  
RECOMMENDATIONS ARE MADE AS TO AREAS IN WHICH  
INSULATIVE VALUES COULD BE INCREASED WITHOUT  
HAMPERING FREE MOVEMENT OF THE WEARER, AND DESIGN  
MODIFICATIONS ARE SUGGESTED TO LIMIT FREE MOVEMENT OF  
WATER INTO AND OUT OF THE SUIT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-748 091 6/17 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

COMBAT UNIFORMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON TEST OPERATIONS  
PROCEDURE.

JUN 72 16P  
REPT. NO. TOP-10-3-021

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES AD-873 485.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS),  
SAFETY, TEST FACILITIES, ACCEPTABILITY, WEAR RESISTANCE,  
MAINTAINABILITY, HUMAN FACTORS ENGINEERING, VALUE  
ENGINEERING, ENVIRONMENTAL TESTS (U)

IDENTIFIERS: \*COMBAT UNIFORMS, COMMODITY SERVICE TEST  
PROCEDURE (U)

THE REPORT DESCRIBES A METHOD FOR EVALUATION OF  
COMBAT UNIFORM OPERATIONAL AND FUNCTIONAL  
CHARACTERISTICS. IDENTIFIES SUPPORTING TESTS,  
FACILITIES, AND EQUIPMENT REQUIRED. PROVIDES  
PROCEDURES FOR PREOPERATIONAL INSPECTION, PHYSICAL  
CHARACTERISTICS, SAFETY, PERSONNEL TRAINING, SIZING,  
FITTING, ISSUE, FUNCTIONAL SUITABILITY, DURABILITY,  
MAINTAINABILITY, HUMAN FACTORS, AND VALUE ANALYSIS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-748 836 15/2 13/1  
WESTINGHOUSE ELECTRIC CORP PITTSBURGH PA

VENTILATING BACKPACK FOR THE SUIT SYSTEM,  
TOXICOLOGICAL PROTECTIVE MICRO-CLIMATE  
CONTROLLED (CB PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-JAN 72,  
JAN 72 71P NAUMER, D. A. IRITTER, R. I

CONTRACT: DAAG17-70-C-0171

PROJ: DA-1-J-664713-DL-40

MONITOR: USA-NLABS/C/PLSEL

TR-72-61-CE,96

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COOLING + VENTILATING EQUIPMENT, DESIGN),  
(\*MILITARY PERSONNEL, \*PROTECTIVE CLOTHING), BREATHING  
APPARATUS, CHEMICAL WARFARE AGENTS, BIOLOGICAL WARFARE  
AGENTS, EXPOSURE SUITS, HOSES, CONTAINERS, ELECTRIC  
CABLES, VENTILATION, FLOWERS, ENVIRONMENTAL TESTS (U)  
IDENTIFIERS: EXPLOSIVE ORDNANCE DISPOSAL (U)

A VENTILATING BACKPACK ASSEMBLY WAS DESIGNED TO  
PROVIDE 18 CFM OF FILTERED AIR TO A SPECIALLY  
DESIGNED MILITARY CLOTHING ENSEMBLE TO PROVIDE  
EXPLOSIVE ORDNANCE PERSONNEL WITH PROTECTION FROM  
CB AGENTS. THIS FILTERED AIR PROVIDES BREATHING  
AIR AND BODY VENTILATION WHILE A SUITED INDIVIDUAL  
PERFORMS VARIOUS TASKS IN A TOXIC (CB) ENVIRONMENT.  
THE REPORT DISCUSSES THE VARIOUS IMPROVEMENTS AND  
INNOVATIONS WHICH WERE INCORPORATED IN THE FINAL  
PRODUCTION MODEL. THE PROJECT CONSISTED OF FOUR  
PHASES: A PRODUCT ENGINEERING STUDY, PRODUCTION OF  
TEN PROTOTYPE UNITS, ENVIRONMENTAL TESTING AND  
ENGINEERING FIELD SUPPORT, AND THE PRODUCTION OF  
TWENTY-FIVE UNITS WITH EXTRA BATTERY PACKS.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-749 345 6/17

NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

THE DEVELOPMENT OF A BUOYANT-BALLISTIC VEST  
FOR NAVAL FORCES.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

SFP 72 36P

KUPFERMAN, ZELIG ISILVIA, JOHN

REPT. NO. TR-104, 9-69

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, DESIGN), BUOYANCY,  
FOAM, BALLISTICS, POLYETHYLENE PLASTICS, NYLON,  
PROPENES, TEXTILES, VINYL PLASTICS, TEST METHODS, NAVAL  
PERSONNEL (U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT (NCTRU) HAS DEVELOPED A BUOYANT-BALLISTIC  
PROTECTIVE VEST WHICH PROVIDES INHERENT BUOYANCY BY  
THE USE OF THREE PLIES OF 1/4-INCH UNICELLULAR,  
POLYETHYLENE FOAM TOTALLING APPROXIMATELY 12 OUNCES.  
DESIGNED PRIMARILY FOR NAVAL CREWS SUBJECTED TO  
ENEMY SHELLING, THE VEST AFFORDS BALLISTIC PROTECTION  
BY EMPLOYING SIX PLIES OF BALLISTIC NYLON CLOTH IN  
FRONT OF EIGHT PLIES OF A LIGHTWEIGHT, NEEDLEPUNCHED,  
POLYPROPYLENE FELT. IN ADDITION, EACH OF THE TWO  
BALLISTIC ASSEMBLIES ARE ENCAPSULATED IN EIGHT MIL  
VINYL FILM TO PREVENT WETTING-OUT AND TO IMPART ADDED  
BUOYANCY. BALLISTIC TESTS HAVE SHOWN THE NEW VEST  
TO HAVE EQUIVALENT BALLISTIC PROTECTION TO THE NYLON  
CLOTH VEST, AND POOL TESTS HAVE SHOWN EXCELLENT  
BUOYANCY CHARACTERISTICS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-750 830 6/17  
DEFENCE RESEARCH INFORMATION CENTRE ORPINGTON  
(ENGLAND)

ASSESSMENT OF THE THERMAL RESISTANCE OF  
CLOTHING.

(U)

OCT 72 9P VOINOV, YU. F. IKARLINA, K.  
V. ;  
REPT. NO. DRIC-TRANS-2920, DRIC-BR-30290

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF IZVESTIYA VYSSHIKH  
UCHERNYKH ZAVEDENII. TEKHNLOGIYA LOGKOI  
PROMYSHLENNOSTI (USSR) NI P80-84 1972, BY B. F.  
TOMS.

DESCRIPTORS: (\*HEAT RESISTANT MATERIALS, PROTECTIVE  
CLOTHING), (\*PROTECTIVE CLOTHING, \*THERMAL PROPERTIES),  
HEAT TRANSFER, STRESS (PHYSIOLOGY), MATHEMATICAL MODELS,  
THICKNESS, COSTS, DESIGN, USSR (U)  
IDENTIFIERS: THERMAL RESISTANCE, TRANSLATIONS (U)

IN THE THERMAL RESISTANCE OF CLOTHING A SUBSTANTIAL  
PART MAY BE PLAYED BY ANY OF THE COMPONENTS OF THE  
THERMAL RESISTANCE DEPENDING ON THE THICKNESS OF THE  
CLOTHING AND THE MAGNITUDE OF ITS OVERALL THERMAL  
RESISTANCE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-752 128 6/17 15/2 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CLOTHING AND EQUIPMENT, INDIVIDUAL,  
PROTECTIVE, CB.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON TEST OPERATIONS  
PROCEDURE.

JUL 72 14P  
REPT. NO. TOP-8-3-041

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS),  
(\*CHEMICAL WARFARE AGENTS, PROTECTIVE CLOTHING), ARMY  
EQUIPMENT, SAFETY, MILITARY REQUIREMENTS, COMPATIBILITY,  
RELIABILITY, MAINTAINABILITY, HUMAN FACTORS ENGINEERING (U)

THE REPORT DESCRIBES A METHOD FOR EVALUATION OF  
INDIVIDUAL CLOTHING AND EQUIPMENT PROTECTION  
CHARACTERISTICS RELATIVE TO CHEMICAL AGENTS.  
IDENTIFIES SUPPORTING TESTS, FACILITIES, AND  
EQUIPMENT REQUIRED. PROVIDES PROCEDURES FOR  
PHYSICAL CHARACTERISTICS, SAFETY, PERSONNEL TRAINING,  
SIZING, FITTING, DORNING, DOFFING, COMPATIBILITY WITH  
COMBAT TASKS, DURABILITY, RELIABILITY,  
MAINTAINABILITY, HUMAN FACTORS, AND VALUE ANALYSIS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-754 278 6/17  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

COLD WATER EVALUATION OF ENVIRONMENTAL  
MARINE DIVING SUITS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 72 22P VEGHTE, JAMES H. IKLEMM,  
FRITZ K. ;  
REPT. NO. AMRL-TR-72-65  
PROJ: AF-7222  
TASK: 722212

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, EFFECTIVENESS), COLD  
WEATHER TESTS, PROTECTIVE CLOTHING,  
EXPOSURE (PHYSIOLOGY)

(U)

THE 24-HOUR COLD WATER IMMERSION - LIFE RAFT  
EXPOSURES WERE CONDUCTED IN OUR LABORATORY TEST  
FACILITY INVOLVING THREE SUBJECTS IN EACH EXPOSURE.  
PHYSIOLOGIC DATA WERE OBTAINED DURING THESE  
EXPOSURES TO DISCERN THE BETTER COLD WATER PROTECTIVE  
CAPABILITIES OF TWO ENVIRONMENTAL MARINE DIVING  
SUITS. THE SWEDISH UNISUIT PROVED THERMALLY  
SUPERIOR TO THE DUNLOP SUIT. SEVERAL  
RECOMMENDATIONS ARE MADE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AP-754 935 6/17 11/5  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

EVALUATION OF FIRE RETARDANT FABRICS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 72 21P VEGHTE, JAMES H. ; MARKO,  
ADOLF R. ; WILSON, CHARLES ;  
REPT. NO. AMRL-TR-72-66  
PROJ: AF-7222

UNCLASSIFIED REPORT

DESCRIPTORS: (•FIRE PROTECTIVE CLOTHING, •HEAT RESISTANT  
PLASTICS), EFFECTIVENESS, NYLON, BENZIMIDAZOLES, FLIGHT  
CLOTHING, AIRCRAFT FIRES, HEAT TRANSFER,  
BURNS (INJURIES), SKIN (ANATOMY), HEAT TOLERANCE (U)  
IDENTIFIERS: •NOMEX POLYMERS, •BENZIMIDAZOLE  
POLYMERS (U)

THE VALIDITY OF CURRENT EXPERIMENTAL METHODS OF  
EVALUATING FIRE RETARDANT CLOTHING IS DISCUSSED.  
TWO HEAT RESISTANT, SYNTHETIC MATERIALS, NOMEX  
AND POLYBENZIMIDAZOLE (PBI), ARE COMPARED IN  
TERMS OF THEIR PHYSIOLOGIC PROTECTIVE CAPABILITIES.  
THE DATA INDICATES PBI IS SUPERIOR TO NOMEX IN  
AFFORDING SLIGHTLY LONGER PROTECTION. SEVERAL  
RECOMMENDATIONS ARE MADE. ALSO REPORTED BRIEFLY  
ARE RESULTS OF DETERMINING THE TOLERANCE TIME OF SKIN  
TO TEMPERATURE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-755 643 15/5 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

GARMENTS, OUTER (WET WEATHER).

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON TEST OPERATIONS  
PROCEDURE.

DEC 72 14P RUSH, RAY I  
REPT. NO. TOP-10-3-215  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS),  
VISUAL INSPECTION, SAFETY, MAINTAINABILITY, HUMAN  
FACTORS ENGINEERING, GLOVES, SHOES, OVERCOATS, MILITARY  
REQUIREMENTS (U)  
IDENTIFIERS: COMBAT CLOTHING, EXPANDED SERVICE TEST  
PROCEDURES (U)

THE REPORT DESCRIBES A METHOD FOR EVALUATION OF WET  
WEATHER CLOTHING OPERATIONAL AND FUNCTIONAL  
PERFORMANCE CHARACTERISTICS. IDENTIFIES SUPPORTING  
TESTS, FACILITIES, AND EQUIPMENT REQUIRED. PROVIDES  
PROCEDURES FOR PREOPERATIONAL INSPECTION, PHYSICAL  
CHARACTERISTICS, SAFETY, PERSONNEL TRAINING,  
FUNCTIONAL SUITABILITY, DURABILITY, RELIABILITY,  
MAINTAINABILITY, HUMAN FACTORS, AND VALUE ANALYSIS.  
(AUTHOR) (U)

17  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-756 457 11/5 13/8  
AMERICAN CYANAMID CO STAMFORD CONN

DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 72 26P DELAPP, DARWIN ;  
CONTRACT: DAAG17-72-C-0080  
PROJ: DA-1-J-662713-D-J-40  
MONITOR: USA-NLABS, C/PLSEL  
TS-101

TR-73-21-CE.

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEXTILES, \*LAMINATES), (\*WEATHERPROOFING,  
TEXTILES), (\*PROTECTIVE CLOTHING, WEATHERPROOFING),  
MILITARY REQUIREMENTS, NYLON, SYNTHETIC FIBERS,  
MANUFACTURING, EXTRUSION, ACCEPTABILITY, POLYESTER  
PLASTICS

(U)

IDENTIFIERS: POLYBUTENES, \*LAMINATED FABRICS,  
TETRAFLUOROETHYLENE RESINS

(U)

LABORATORY AND COMMERCIAL SCALE EXPERIMENTS  
PRODUCED A THREE LAYER LAMINATED FABRIC (5.2 OX/SQ  
YD) EXHIBITING 21.5 PSI HYDROSTATIC RESISTANCE, AND  
PERMITTING 590 GRAMS PER SQUARE METER PER 24 HOURS  
MOISTURE VAPOR TRANSMISSION. THE FUNCTIONAL AND  
PROCESSING CHARACTERISTICS OF SIX DIFFERENT POROUS  
POLYMER STRUCTURES, COMPRISING THE INNER LAMINATE  
LAYER, WERE EXPLORED. THE MECHANICAL OPERATION EVEN  
AT FULL SCALE PROCEEDED WITHOUT DIFFICULTY. THE  
LAMINATES WERE MADE BY USING POLY(L-BUTENE)  
90%-TETRAFLUOROETHYLENE 10% AS THE FIBROUS POROUS  
POLYMER STRUCTURE AND POLYESTER OR NYLON AS THE TOP  
AND BOTTOM FACING MATERIAL.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-759 525 6/17 11/5 1/2  
ACUREX CORP MOUNTAIN VIEW CALIF AEROTHERM DIV

ANALYSIS OF THE THERMAL RESPONSE OF  
PROTECTIVE FABRICS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. JUN 71-JUN 72,  
JAN 73 220P MORSE, HOWARD L. ; THOMPSON,  
JAMES G. ; CLARK, KIMBLE J. ; GREEN, KENNETH A.  
; MOYER, CARL B. ;

CONTRACT: F33615-72-C-1298

PROJ: AF-7320

TASK: 732002

MONITOR: AFML TR-73-17

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEXTILES, THERMAL PROPERTIES),  
(\*SKIN(ANATOMY), BURNS(INJURIES)), (\*AIRCRAFT FIRES,  
\*PROTECTIVE CLOTHING), FLIGHT CLOTHING, MATHEMATICAL  
MODELS, IGNITION, THERMAL CONDUCTIVITY, EXPERIMENTAL  
DATA, CHEMICAL PROPERTIES, PHYSICAL PROPERTIES, AIR  
FORCE RESEARCH

(U)

IDENTIFIERS: NOMEX FABRICS, POLYBENZIMIDAZOLE FABRIC,  
JP-4 FUEL

(U)

THE OBJECTIVE OF THE PROGRAM WAS TO DEVELOP A  
THEORETICAL AND EMPIRICAL MATHEMATICAL RELATIONSHIP  
TO DEFINE THE FABRIC-SKIN SYSTEM'S RESPONSE WHEN  
EXPOSED TO JP-4 FUEL FIRE. CRITICAL FABRIC  
PARAMETERS, SUCH AS OPTICAL, THERMO-CHEMICAL AND  
PHYSICAL CHARACTERISTICS ARE DEFINED IN A MANNER  
WHICH WILL ALLOW THE FABRIC DESIGNER TO DEVELOP  
IMPROVED THERMALLY PROTECTIVE LIGHT WEIGHT FABRICS.  
THE COMPUTER CODE EVALUATES THE MODEL PARAMETER  
VARIATION IN TERMS OF RESULTANT HUMAN SKIN BURNS.  
A COMPARISON OF THE ANALYTICAL MODEL RESULTS WITH  
LABORATORY AND FIRE PIT DATA DEMONSTRATES EXCELLENT  
CORRELATION WITHIN THE LIMITS OF THE PRESENT STUDY.  
(AUTHOR MODIFIED ABSTRACT)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-761 779 6/17 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

+G(Z) PROTECTION AFFORDED BY STANDARD AND  
PREACCELERATION INFLATIONS OF THE BLADDER AND  
CAPSTAN TYPE G-SUITS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
73 9P BURTON, RUSSELL R. ;  
PARKHURST, MICHAEL J. ; LEVERETT, SIDNEY D. ;  
JR;

REPT. NO. SAM-TR-72-436  
PROJ: AF-7930  
TASK: 793003

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AEROSPACE MEDICINE, V44 N5  
P488-494 MAY 73.

DESCRIPTORS: (+ACCELERATION TOLERANCE, +PROTECTIVE  
CLOTHING), (+PRESSURE SUITS, ACCELERATION TOLERANCE),  
EFFICIENCY (U)

IDENTIFIERS: \*G SUITS (U)

POSITIVE (+GZ) RAPID ONSET ACCELERATION  
TOLERANCES WERE DETERMINED ON 8 MALE SUBJECTS:  
WITHOUT A G-SUIT, G-SUIT NOT INFLATED AND G-  
SUIT INFLATED. THREE TYPES OF SUITS WERE USED ON  
EACH SUBJECT: STANDARD BLADDER, CSU-12/PI AND  
TWO TYPES OF CAPSTAN SUITS WITH STANDARD AND MODIFIED  
ABDOMINAL BLADDER. TWO G-SUIT INFLATION  
PROCEDURES ALSO WERE USED IN DEVELOPING +G  
TOLERANCES: STANDARD INFLATION, WHICH BEGAN AT 0.2  
G AND CONTINUED AT THE RATE OF 1.5 PSI/G  
(ABDOMINAL BLADDER) AND 3 PSI/G (CAPSTAN),  
AND PREACCELERATION INFLATION (0.5, OR 10 SEC.  
PRIOR TO ACCELERATION ONSET), WHICH INVOLVED SUIT  
PRESSURES OF 1 PSI (ABDOMINAL BLADDER) AND 12 PSI  
(CAPSTAN), WITH SUIT INFLATION CONTINUING  
IMMEDIATELY UPON ACCELERATION ONSET. ACCELERATION  
MEAN TOLERANCES FOR THE 3 SUITS TESTED USING STANDARD  
INFLATION, RANGED FROM 4.5 TO 4.7 (+GZ).  
PREACCELERATION INFLATIONS OF 0.5, OR 10 SEC  
INCREASED MEAN +GZ TOLERANCES 0.4 TO 0.6 G ABOVE  
STANDARD INFLATION METHODS. PROCEDURAL DIFFERENCES  
IN PREACCELERATION SUIT INFLATION WERE CONSIDERED  
MAJOR REASONS FOR FINDING AN INCREASE IN +GZ  
TOLERANCE IN THIS INVESTIGATION AS OPPOSED TO A  
DECREASE IN ACCELERATION TOLERANCES PREVIOUSLY  
REPORTED IN OTHER PREINFLATION STUDIES. (MODIFIED  
AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-761 797 6/17 6/19  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

BACKGROUND AND DEVELOPMENT OF BOYLE'S LAW  
ALTITUDE SUITS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 73 SIP BOWEN, J. D. ;  
REPT. NO. AMRL-TR-72-77

UNCLASSIFIED REPORT

DESCRIPTORS: (•PRESSURE SUITS, DESIGN), EFFICIENCY,  
DECOMPRESSION, HIGH ALTITUDE, HUMAN FACTORS  
ENGINEERING  
IDENTIFIERS: IDEAL GAS LAW

(U)  
(U)

ALL SIGNIFICANT AEROSPACE MEDICAL RESEARCH  
LABORATORY (AMRL) INVESTIGATIONS OF DESIGN  
APPROACHES AND TECHNIQUES APPLICABLE TO EMERGENCY  
PRESSURE SUITS FOR FLIERS DURING THE 1960 TO 1972  
PERIOD ARE DESCRIBED AND THE RESULTS SUMMARIZED.  
THE FIRST PROMISING APPLICATION OF BOYLE'S LAW;  
THAT IS, 'THE VOLUME OF A BODY OF GAS AT CONSTANT  
TEMPERATURE IS INVERSELY PROPORTIONAL TO THE ABSOLUTE  
PRESSURE' TO THE AUTOMATIC PRESSURIZATION OF A SUIT  
WAS DEMONSTRATED AT THE SCHOOL OF AEROSPACE  
MEDICINE, BROOKS AFB TEX., BY DAVIS,  
RITZINGER, ET AL, IN 1966. SUBSEQUENT EFFORTS  
CAPRIED ON BY THE AMRL ARE REVIEWED IN SUFFICIENT  
DETAIL TO PROVIDE CONTINUITY AND AN OVERVIEW OF THE  
PROGRAM LEADING UP TO ITS TERMINATION AT THE  
AEROSPACE MEDICAL RESEARCH LABORATORY IN THE  
SPRING OF 1972 AND TRANSFER TO THE SCHOOL OF  
AEROSPACE MEDICINE AT BROOKS AFB, TEXAS.  
FINAL CONFIGURATIONS THAT WOULD FULFILL ALL AIRCREW  
OPERATIONAL REQUIREMENTS ARE NOT FULLY DEVELOPED.  
HOWEVER, MAJOR PROGRESS WAS ACHIEVED IN FABRICATION  
TECHNIQUES AND IN THE VALIDATION OF FEATURES THAT  
SHOULD FIND APPLICATION IN A NEARLY OPTIMUM PROTOTYPE  
APPROACHING THE REAL NEEDS OF THE POTENTIAL USERS.  
(MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DNC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-762 428 6/11 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

DAMAGE CONTROL SUIT SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 73 36P AUDET, NORMAN F. (REINS,  
DALE A. (CHADWICK, ARTHUR H. (REINS,  
REPT. NO. TR-107, 1-72

UNCLASSIFIED REPORT

DESCRIPTORS: (•LIFE SUPPORT, •PROTECTIVE CLOTHING),  
CLOSED ECOLOGICAL SYSTEMS, EXPOSURE SUITS, HAZARDS,  
ENVIRONMENT, HIGH TEMPERATURE, GASES, TOXICITY,  
HYPOXIA (U)

A PROTOTYPE DAMAGE-CONTROL-SUIT SYSTEM (DCSS) WAS  
DESIGNED AND FABRICATED AS PART OF THE NAVY  
CLOTHING AND TEXTILE RESEARCH UNIT'S  
(NCTRU) CONTINUING PROGRAM TO CONDUCT FEASIBILITY  
AND PROTOTYPE DEVELOPMENT STUDIES ON PERSONNEL LIFE-  
SUPPORT CLOTHING SYSTEMS FOR PROTECTION AGAINST  
VARIOUS ENVIRONMENTAL HAZARDS. THE DCSS CONSISTS  
OF A LIFE-SUPPORT PACK; AN IMPERMEABLE SUIT WITH  
HEADPIECE, BOOTS, AND GLOVES, AND A COMMUNICATION  
HEADSET. (MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-762 544 6/17 11/10  
AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

DEVELOPMENT OF REFLECTIVE MATERIALS FOR FIRE  
FIGHTER'S BOOTS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUN 71-JAN 72,  
APR 73 24P STANTON, ROBERT M. I  
REPT. NO. AFML-TR-72-247  
PROJ: AF-7320  
TASK: 732002

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELASTOMERS, FIRE RESISTANT MATERIALS),  
(\*PIGMENTS, REFLECTIVITY), (\*SHOES, FIRE PROTECTIVE  
CLOTHING), REFLECTIVITY, INFRARED RADIATION, SYNTHETIC  
RUBBER, HALOCARBON PLASTICS, ANTIMONY COMPOUNDS,  
SULFIDES, TITANIUM COMPOUNDS (U)  
IDENTIFIERS: BOOTS(FOOTWEAR) (U)

THE OBJECTIVE OF THE PROGRAM WAS TO CONDUCT A  
PRELIMINARY INVESTIGATION OF CURRENT BOOT MATERIALS  
USED BY AIR FORCE FIRE FIGHTING PERSONNEL AND TO  
DEMONSTRATE THE CAPABILITY OF DEVELOPING NEWER  
MATERIALS TO ENHANCE THE REFLECTIVE CHARACTERISTICS  
OF FUTURE BOOT MATERIALS TO PROVIDE SUPERIOR  
PROTECTIVE QUALITIES. IMPROVED PROTECTION IS  
REQUIRED TO WARD OFF RADIANT ENERGY FROM JP-4 FUEL  
FIRES. PRESENT AIR FORCE BOOT MATERIALS ARE  
MADE OF A NEOPRENE BINDER WITH A CARBON BLACK FILLER.  
THE APPROACH TAKEN WAS TO DETERMINE THE EFFECT OF  
VARIOUS PIGMENTS, INCORPORATED INTO THE PRESENT  
NEOPRENE BINDER, THAT ARE KNOWN TO HAVE SPECIFIC  
REFLECTIVE QUALITIES FOR SOLAR AND INFRARED  
RADIATION. BY VARYING THE AMOUNT OF PIGMENT ONE  
COULD THEN DETERMINE THE SPECIFIC EFFECTS OF THE  
PIGMENT AND THE BINDER. AN ATTEMPT WAS ALSO MADE TO  
DETERMINE THE EFFECT OF BINDER MATERIALS TRANSPARENT  
IN THE INFRARED WAVELENGTH RANGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-763 001 6/17 15/2 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

COMBAT UNIFORMS AND PROTECTIVE  
EQUIPMENT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON TEST OPERATIONS  
PROCEDURE.

FEB 73 39P

REPT. NO. TOP-10-2-021

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED 11 JAN 68,  
AD-721 610.

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS),  
(\*ARMY EQUIPMENT, PROTECTIVE CLOTHING), RELIABILITY,  
PERFORMANCE(ENGINEERING), ACCEPTABILITY, ENVIRONMENTAL  
TESTS (U)

IDENTIFIERS: COMBAT UNIFORMS, COMMODITY ENGINEERING  
TEST PROCEDURES, PERFORMANCE EVALUATION (U)

THE PROCEDURE DESCRIBES A METHOD FOR EVALUATION OF  
COMBAT UNIFORMS AND PROTECTIVE EQUIPMENT OPERATIONAL  
AND FUNCTIONAL PERFORMANCE CHARACTERISTICS.  
IDENTIFIED SUPPORTING TESTS, FACILITIES, AND  
EQUIPMENT REQUIRED, DISCUSSES TEST PLANNING AND  
PREPARATION FOR TESTS, PROVIDES PROCEDURES FOR  
PHYSICAL CHARACTERISTICS, PROTECTION AGAINST AGENTS,  
SIZING, FITTING, DONNING, DOFFING, FUNCTIONAL  
SUITABILITY, LEAKAGE, WATER EXPOSURE, INFRARED  
REFLECTANCE, STATIC ELECTRICITY, FILTER GAS LIFE,  
LAUNDERABILITY, STORAGE, WATER IMMERSION,  
TRANSPORTABILITY, HUMAN FACTORS, RELIABILITY,  
DUPABILITY, AND MAINTENANCE EVALUATION. APPENDIXES  
DISCUSS TEST COURSES, SIZING AND FITTING, DONNING AND  
DOFFING DATA, BOOT IMPREGNATING PROCEDURES, AND  
HANDWEAR TESTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-743 378 6/11 11/9  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

DEVELOPMENT AND EVALUATION OF DEEP-SEA  
SWIMSUIT MATERIALS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUN 73 59P AUDET, NORMAN F. ILARRIVEE,  
MAURICE N. I  
REPT. NO. TR-108, 5-72

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, DESIGN); (\*THERMAL  
INSULATION, UNDERWATER CLOTHING); THERMAL INSULATION,  
ISOCYANATE PLASTICS, FOAM, MECHANICAL PROPERTIES,  
COMPRESSIVE PROPERTIES, THERMAL CONDUCTIVITY, POLYVINYL  
CHLORIDE, NAVAL RESEARCH, DEEP SUBMERGENCE (U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT (NCTRU) HAS DEVELOPED A SWIMSUIT MATERIAL  
THAT MEETS THE REQUIREMENTS OF NAVY PERSONNEL WHO  
OPERATE AT GREAT SEA DEPTHS FOR LONG PERIODS OF TIME.  
TWO CHEMICALLY DISTINCT, FLEXIBLE, SYNTACTIC FOAMS--  
A UNIT-DEVELOPED, POLYURETHANE, HOLLOW-GLASS-  
MICROSPHERE COMPOSITE AND A PROPRIETARY,  
POLYVINYLCHLORIDE, HOLLOW-GLASS-MICROSPHERE  
COMPOSITE--HAVE BEEN PRODUCED WHICH MAY PROVE USEFUL  
FOR SWIMSUIT APPLICATIONS IN DEEP-SEA ENVIRONMENTS  
DOWN TO 1000 PSW. TESTS SHOWED THAT BOTH  
MATERIALS WERE ESSENYIALLY INCOMPRESSIBLE TO DEPTHS  
OF 1000 PSW (LESS THAN 3%) AND PROVIDED MORE  
INSUIATION THAN CURRENTLY USED NEOPRENE-FOAM  
MATERIALS AT DEPTHS GREATER THAN 20 PSW. THE  
MATERIALS, HOWEVER, WERE CONSIDERABLY HEAVIER THAN  
THE FOAM ALTHOUGH SIGNIFICANTLY LESS DENSE THAN SEA  
WATER. STANDARD WET-STYLE SWIMSUITS WERE  
FABRICATED FROM THESE EXPERIMENTAL MATERIALS FOR  
VERIFICATION OF SAMPLE THERMAL-CONDUCTIVITY DATA.  
(MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-766 684 6/17  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

FOOTWEAR FOR INUNDATED AREAS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 73 28P SWAIN, DOUGLAS S. ISPAETH,  
JEANNE F. I  
REPT. NO. C/PLSEL-109  
PROJ: DA-1-J-664713-D-547  
MONITOR: USA-NLABS TR-73-57-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FEET, \*PROTECTIVE CLOTHING),  
INTEGUMENTARY DISEASES, SKIN(ANATOMY), INFANTRY,  
SOUTHEAST ASIA, VIETNAM, TROPICAL REGIONS  
IDENTIFIERS: \*FOOTWEAR, \*IMMERSION FOOT

(U)

(U)

WARM WATER IMMERSION FOOT AND RELATED  
DERMATOLOGICAL PROBLEMS IN INUNDATED AREAS OF  
SOUTHEAST ASIA SERIOUSLY LIMITED THE COMBAT  
EFFECTIVENESS OF LARGE NUMBERS OF OUR TROOPS. AS A  
CONTRIBUTION TO MINIMIZING THE OCCURRENCE AND  
INTENSITY OF THE PROBLEM, SPECIAL FOOTWEAR WAS  
DEVELOPED BY THE U.S. ARMY NATICK  
LABORATORIES TO PERMIT QUICKER DRYING OF THE SKIN  
ON THE FEET AND LEGS. THESE ITEMS INCLUDED A  
LIGHTWEIGHT NYLON SOCK TO REPLACE THE STANDARD WOOL  
SOCK; A SLIDE FASTENER FOR THE TROPICAL COMBAT BOOT  
TO ENCOURAGE QUICKER REMOVAL OF THE BOOTS WHEN AN  
OPPORTUNITY AROSE TO TAKE THEM OFF; AND A LIGHTWEIGHT  
COMFORT SHOE, SIMILAR TO A TENNIS SHOE, THAT COULD BE  
TUCKED INTO A POCKET AND WORN LATER IN BIVOUAC AND  
BOOT CAMP AREAS IN PLACE OF A SOLDIER'S REGULAR BOOT.  
BASED UPON THEIR SUCCESSFUL TESTING IN VIETNAM,  
THE ABOVE THREE ITEMS WERE ADOPTED IN MARCH 1970 AS  
STANDARD A ITEMS FOR ZONES 1 AND 2.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-746 690 6/17 15/5  
ARMY NATICK LABS MASS CLOTHING AND PERSONAL LIFE SUPPORT  
EQUIPMENT LAB

DEVELOPMENT OF LIGHTWEIGHT (COLD-WET)  
INSULATED FOOTWEAR.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 73 124P ASSAF, JOSEPH E. ;  
PROJ: DA-1-J-662713-DJ-40  
MONITOR: USA-NLABS 73-15-CE

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHOES, \*ISOCYANATE PLASTICS), (\*THERMAL  
INSULATION, SHOES), (\*PROTECTIVE CLOTHING, SHOES),  
MANUFACTURING, PROTECTIVE EQUIPMENT, ENVIRONMENTAL  
TESTS, MILITARY PERSONNEL, WEIGHT, MOISTUREPROOFING,  
DESIGN, TEXTILES, ADHESIVES, COATINGS (U)  
IDENTIFIERS: \*BOOTS, PROTECTIVE EQUIPMENT (U)

THE FIRST GENERATION OF WHAT MAY BE CONSIDERED A  
NEW CONCEPT IN LIGHTWEIGHT INSULATED MILITARY  
FOOTWEAR IN A PULL-ON TYPE CONSTRUCTION WAS PRODUCED  
BY INTEGRALLY CASTING AND EXPANDING LIQUID  
POLYURETHANE SYSTEMS. THE FOOTWEAR DEVELOPED MEETS  
THE ORIGINAL REQUIREMENTS ESTABLISHED UNDER THIS  
PROGRAM TO DEVELOP A LIGHTWEIGHT IMPERMEABLE BOOT  
WITH INSULATION SUFFICIENT TO PROVIDE PROTECTION FOR  
2 HOURS INACTIVITY AT -20F. THE AVERAGE WEIGHT OF  
A SIZE TEN BOOT IS 24 OUNCES, AS COMPARED WITH 44  
OUNCES FOR THE STANDARD (BLACK) INSULATED COLD-  
WET BOOT. THE WATER ABSORPTION OF THE NEW FOOTWEAR  
IS LESS THAN 5% BY WEIGHT. THE DEVELOPED  
LABORATORY PROCEDURES WERE USED TO DESIGN AND PUT  
INTO OPERATION A PILOT PLANT FACILITY. INITIAL  
PRODUCTION OF FOOTWEAR INDICATES THAT THE ECONOMICS  
AND PROCESSES INVOLVED MAY BE SATISFACTORY FOR THE  
FINAL COMMERCIALIZATION OF THIS NEW CONCEPT OF  
LIGHTWEIGHT INSULATED FOOTWEAR. (MODIFIED AUTHOR  
ABSTRACT) (U)



UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-768 313 6/17  
NAVAL SUBMARINE MEDICAL RESEARCH LAB GROTON CONN

A REVIEW OF AVAILABLE HEATED WET-SUIT  
PROTECTION FOR DIVERS AND SWIMMERS. (U)

FEB 73 23P RENTZ, FREDERICK P. I  
REPT. NO. NSMRL-739  
PROJ: MF099.01  
TASK: MF099.01.01

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIVING, PROTECTIVE CLOTHING),  
(\*UNDERWATER CLOTHING, HEATERS), THERMAL INSULATION,  
ELECTRICITY, BATTERY COMPONENTS, ELECTRIC BATTERIES,  
RADIOACTIVE ISOTOPES, CHEMICALS (U)

A REVIEW OF CURRENT INFORMATION CONCERNING HEAT  
REPLACEMENT WET-SUITS FOR DIVERS IS PRESENTED. THE  
LIMITATIONS OF PHYSIOLOGIC RESPONSE TO COLD, AIDED BY  
MODERN INSULATIVE GARMENTS, ARE DEFINED. AND THE  
NECESSITY FOR SUPPLEMENTAL HEAT IS DEMONSTRATED.  
DEVELOPMENTS IN ELECTRICALLY HEATED WET-SUITS AND  
HOT WATER SUITS ARE PRESENTED, AS WELL AS INFORMATION  
CONCERNING BATTERIES, CHEMICAL HEATERS AND  
RADIOISOTOPE-FUELED HEATERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-770 375 6/17  
EDGEWOOD ARSENAL ABERDEEN PROVING GROUND MD

THERMAL BALANCE OF MEN UNDER ATROPINE  
THERAPY WEARING CHEMICAL PROTECTIVE  
CLOTHING.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. SEP 71-JAN 73,  
OCT 73 34P CRAIG, F. N. CUMMINGS, E.  
G. I

REPT. NO. EA-TR-4757, EB-TR-73011  
PROJ: DA-1-W-662710-AD-25  
TASK: 1-W-662710-AD-2501

UNCLASSIFIED REPORT

DESCRIPTORS: \*ATROPINE, \*BODY TEMPERATURE, \*SWEAT  
GLANDS, \*PROTECTIVE CLOTHING, THERAPY,  
DEHYDRATION, HEAT PRODUCTION, EVAPORATION,  
COOLING

(U)

IN WARM ENVIRONMENTS THE USE OF ATROPINE IN THE  
TREATMENT OF CASUALTIES FROM ANTICHOLINESTERASE  
AGENTS PRESENTS A POSSIBLE HAZARD BECAUSE THE  
INHIBITION OF SWEATING BY ATROPINE MAY LEAD TO A  
DANGEROUS RISE IN BODY TEMPERATURE. RECENTLY IT  
WAS SHOWN THAT AFTER A 2-MG DOSE OF ATROPINE SULFATE  
THE EFFECTS OF A DEFICIT IN SWEATING COULD BE AVOIDED  
BY ARTIFICIAL WETTING THE CLOTHING. ONE OBJECTIVE  
WAS TO TEST THIS CONCEPT WHEN THE DOSE WAS INCREASED  
TO 4 MG. AT THIS DOSE AND AN INDOOR TEMPERATURE OF  
41C, AN INITIAL WETTING OF THE CLOTHING WITH A  
LITER OF WATER WAS SUFFICIENT TO PREVENT AN UNDESIR-  
ABLE RISE IN BODY TEMPERATURE FOR 3 HOURS WHENAS WHEN THE  
CLOTHING WAS INITIALLY DRY THE BODY TEMPERATURE ROSE  
AT AN UNSAFE RATE. A SECOND OBJECTIVE WAS TO  
EVALUATE THE EFFICIENCY OF EVAPORATIVE COOLING FROM  
WET CLOTHING AS A FRACTION OF THE EVAPORATIVE COOLING  
REQUIRED TO BALANCE THE HEAT EQUATION. THE  
CONCLUSIONS WERE AS FOLLOWS: THE ELEVATION OF  
BODY TEMPERATURE IN MEN WEARING THE TWO-LAYER  
CHEMICAL PROTECTIVE ASSEMBLY IN CONSEQUENCE OF THE  
INHIBITION OF SWEATING BY ATROPINE GIVEN FOR  
TREATMENT OF THE EFFECTS OF ANTICHOLINESTERASE AGENTS  
CAN BE PREVENTED BY ARTIFICIAL WETTING OF THE  
CLOTHING. THE EFFICIENCY OF EVAPORATIVE COOLING OF  
CLOTHED MEN DECREASES AS THE WATER CONTENT OF THE  
CLOTHING INCREASES. (MODIFIED AUTHOR  
ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-773 828 6/17 6/19  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
0-10

PHYSIOLOGICAL EFFECTS OF WEARING THE FIRE  
PROXIMITY SUIT ON CRASH TRUCK ALERT  
STATUS TO HOT-DRY AND HOT-HUMID  
ENVIRONMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
NOV 73 14P KISSEN, ABBOTT T. ; GERDING,  
JAMES J. ; SMILES, KENNETH A. ;  
REPT. NO. AMRL-TR-73-82  
PROJ: AF-7222  
TASK: 7222:2

UNCLASSIFIED REPORT

DESCRIPTORS: \*FIRE FIGHTING, \*PROTECTIVE CLOTHING,  
HUMAN FACTORS ENGINEERING, ENVIRONMENTS,  
PHYSIOLOGICAL EFFECTS, FIRE RESISTANT TEXTILES,  
EXPOSURE (PHYSIOLOGY), HIGH TEMPERATURE,  
STRESS (PHYSIOLOGY)

(U)

TESTS WERE CONDUCTED IN THE ALL WEATHER TEST  
FACILITY TO DETERMINE THE PHYSIOLOGIC PENALTY OF  
WEARING THE FIRE FIGHTER'S PROXIMITY SUIT FOR A 2-  
HOUR ALERT CYCLE IN THE CRASH TRUCK. HOT-DRY AND  
HOT-HUMID ENVIRONMENTS WERE PRODUCED IN THE CHAMBER  
WHICH DUPLICATED THE MOST SEVERE THERMAL CONDITIONS  
ANTICIPATED AT HOT WEATHER BASES. THREE SUBJECTS  
WEARING THE PROXIMITY SUIT (EXCEPT FOR GLOVES AND  
HELMET) WERE EXPOSED (TWICE EACH) TO EITHER THE  
HOT-DRY OR HOT-WET ENVIRONMENTS FOR 2 HOURS. IN  
HALF OF THE TESTS, THE PROXIMITY SUIT COAT WAS ALSO  
ELIMINATED FROM THE CLOTHING ASSEMBLY. FOR THE  
GIVEN HYPERTHERMIC CONDITIONS, THE 2-HOUR EXPOSURE  
PERIODS DO NOT ELICIT PHYSIOLOGIC RESPONSES OR  
SYMPTOMS INDICATIVE OF INCIPIENT HEAT EXHAUSTION  
ALTHOUGH SIGNIFICANT PHYSIOLOGICAL DECREMENTS WERE  
OBSERVED. FOR OPERATIONAL RELEVANCY, WHERE A  
RESCUE PROCEDURE COULD BE CALLED FOR TOWARD THE  
CONCLUSION OF THE THERMAL STRESS PERIOD, THE  
SUGGESTION IS MADE TO CONTINUE THIS EFFORT WITH A  
SERIES OF TESTS IN WHICH AN EXERCISE REGIMEN IS  
SUPERIMPOSED ON THE THERMAL STRESS EXPOSURE.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-777 740 6/17 15/5  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

EVALUATION OF MODIFIED DIVERS' DRESS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SFP 60 14P GREENE, J. L. ;  
REPT. NO. NEDU-EVALUATION-3-61  
PROJ: NS-186-200

UNCLASSIFIED REPORT

DESCRIPTORS: \*DIVER EQUIPMENT, \*UNDERWATER CLOTHING,  
DEEP DIVING, DIVER EQUIPMENT, EVALUATION,  
FABRICS

(U)

A DIVING DRESS OF SOMEWHAT MORE FLEXIBLE MATERIAL  
THAN IS IN THE STANDARD DRESS WAS EVALUATED ON A  
SIDE-BY-SIDE SUBJECTIVE EVALUATION WITH NEGATIVE  
RESULTS. THE EVALUATION IS CONSIDERED OF  
QUESTIONABLE VALUE SINCE THE DEPARTURE FROM STANDARD  
MATERIAL WAS NOT SIGNIFICANT. RECOMMENDATIONS TO  
CONTINUE EFFORTS TO IMPROVE THE STANDARD DRESS ARE  
MADE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-779 886 11/5 6/17  
NAVY CLOTHING AND TEXTILE RESEARCH UNIT NATICK MASS

FLAME-RETARDANT CLOTHING AND TEXTILE ITEMS  
FOR USE IN OXYGEN-ENRICHED ENVIRONMENTS OF  
DECOMPRESSION CHAMBERS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUN 74 29P HIGGINBOTTOM, GEORGE S. ;  
SILVIA, JOHN ; JR;  
REPT. NO. TR-110, 1-74

UNCLASSIFIED REPORT

DESCRIPTORS: \*FIRE PROTECTIVE CLOTHING, \*UNDERWATER  
EQUIPMENT, DIVER EQUIPMENT, OXYGEN, ENVIRONMENTS,  
DECOMPRESSION, CHAMBERS, LABORATORY TESTS, FIRE  
RESISTANT MATERIALS, FLAMMABILITY

(U)

THE NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT (NCTRU) HAS DEVELOPED CLOTHING AND TEXTILE  
ITEMS FOR USE IN THE FIRE-HAZARDOUS, OXYGEN-ENRICHED  
ATMOSPHERES OF DIVERS' DECOMPRESSION CHAMBERS.  
SMALL-SCALE LABORATORY TESTS ON THE FLAME  
RETARDANCY OF MATERIALS IN OXYGEN-ENRICHED  
ENVIRONMENTS LED TO THE SELECTION OF CANDIDATE  
MATERIALS OFFERING A POTENTIAL FOR USE. FULL-SCALE  
FLAMMABILITY TESTS WERE PERFORMED ON ITEMS MADE FROM  
MATERIALS SELECTED FOR FURTHER STUDY. ANALYSES OF  
ALL TEST RESULTS LED TO THE SELECTION OF DURETTE  
(MODIFIED NOMEX) FABRICS AS OFFERING THE BEST  
COMPROMISE CHOICE OF MATERIALS FOR USE IN END-ITEM  
CONSTRUCTIONS. CLOTHING AND TEXTILE ITEMS WERE  
MANUFACTURED AND FORWARDED TO SELECTED NAVY  
DECOMPRESSION-CHAMBER SITES, WHICH ARE USING THEM ON  
A PERMANENT BASIS. INFORMATION BASED UPON A LIMITED  
USE HAS SHOWN THE ITEMS TO BE ACCEPTABLE IN TERMS OF  
DESIGN, PERFORMANCE AND DURABILITY. STATIC  
GENERATION ON DURETTE MATERIALS, REPORTED BY SOME  
ACTIVITIES, CAN BE EFFECTIVELY CONTROLLED BY THE USE  
OF ANTI-STAT SOFTENERS DURING THE LAUNDRY CYCLE.  
(MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-781 304 11/5  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

FABRIC-PROTECTORS,

(U)

JUN 74 7P KUZNETSOV, YU. ;  
REPT. NO. FTD-HT-23-1557-74  
PROJ: FTD-T74-03-01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF IZVESTIYA (USSR)  
N280 P4, 29 NOV 73, BY FRANCIS T. RUSSELL,

DESCRIPTORS: \*FABRICS, \*PROTECTIVE CLOTHING, USSR,  
TRANSLATIONS

(U)

THIS NEWSPAPER ARTICLE TRANSLATION CONCERNS FABRICS  
MADE IN THE USSR FOR PROTECTIVE CLOTHING FOR  
CHEMISTS, PETROLEUM WORKERS, RAILROAD WORKERS AND  
WORKERS IN THE CELLULOSE, PAPER AND METAL INDUSTRIES (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-781 520 6/17 15/2  
DEFENCE RESEARCH ESTABLISHMENT OTTAWA (ONTARIO)

COVERALL, CW PROTECTIVE: STORAGE AND  
PACKAGING.

(U)

JUN 74 18P HART, J. A. IFUOCO, R. P.  
;  
REPT. NO. DREO-R-696

UNCLASSIFIED REPORT

DESCRIPTORS: \*PROTECTIVE CLOTHING, \*CHEMICAL WARFARE  
AGENTS, STORAGE, PACKAGING, TEMPERATURE,  
DETERIORATION, HUMIDITY, POLYURETHANE RESINS,  
MOISTURE, CANADA

(U)

NORMAL AND ACCELERATED STORAGE TESTS SHOWED THAT  
THE MATERIALS OF THE COVERALL CW PROTECTIVE WOULD  
REMAIN IN SERVICEABLE CONDITION FOR AT LEAST FIVE  
YEARS OF STORAGE UNDER TEMPERATE CONDITIONS.  
DETERIORATION OF THE CHEMICAL BARRIER IN HOT AND  
HUMID CONDITIONS WAS ATTRIBUTED TO HYDROLYSIS OF  
POLYURETHANE. PACKAGING TO PROTECT THE MATERIALS  
FROM ATMOSPHERIC POLLUTANTS AND HIGH HUMIDITY IS  
DISCUSSED. TESTS OF THE MOISTURE-PROOF,  
DEHYDRATED, PACKAGING SPECIFIED FOR THIS ITEM SHOWED  
THAT IT WAS ADEQUATE TO ENSURE SATISFACTORY STORAGE  
UNDER ADVERSE CONDITIONS. THE FEASIBILITY OF  
PREPARING GARMENTS FOR PACKAGING BY OVEN-DRYING WAS  
ESTABLISHED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-792 112 6/17 15/6 1/3  
ARMY LAND WARFARE LAB ABERDEEN PROVING GROUND MD

UH-1 DOOR GUNNER PROTECTION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.:

MAR 74 29P WOOD, BENJAMIN F. ;  
REPT. NO. LWL-TR-74-13  
PROJ: LWL-Q1-M-73

UNCLASSIFIED REPORT

DESCRIPTORS: \*PROTECTIVE CLOTHING, \*GUNNERS,  
ACCEPTABILITY, TEST METHODS, KITS, AIRCRAFT  
DOORS, COLD WEATHER, PROTECTION, THERMAL  
INSULATION, ALASKA, HELICOPTERS

(U)

IDENTIFIERS: UH-1D AIRCRAFT, H-1 AIRCRAFT, UH-  
1H AIRCRAFT

(U)

A COLD WEATHER PROTECTION KIT FOR DOOR GUNNERS AND  
CREW WAS DEVELOPED FOR THE UH-1D/H HELICOPTER.  
THE KIT CONSISTS OF A BULKHEAD AND SLIDING DOORS  
WHICH PERMITS THE GUNNER'S COMPARTMENT TO BE  
PARTITIONED FROM THE REST OF THE AIRCRAFT INTERIOR.  
THE GUNNER IS DRESSED IN CLOTHING TO PROVIDE HIM  
SUFFICIENT PROTECTION WHILE THE REST OF THE CREW AND  
PASSENGERS ARE NOT EXPOSED. SEVERAL CLOTHING  
ENSEMBLES WERE TESTED. THE KIT AND TWO SETS OF  
COLD WEATHER CLOTHING WERE EVALUATED IN ALASKA.  
THE EVALUATION WAS FAVORABLE, EXCEPT FOR COMMENTS  
THAT THE DOOR GUNNERS WERE TOO WARM WHEN THE DOORS  
WERE CLOSED, AND LITTER AND PASSENGER CAPACITY WERE  
AFFECTED. (MODIFIED AUTHOR ABSTRACT)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-805 099 15/2  
GAGLIARDI RESEARCH CORP EAST GREENWICH R I

DEVELOPMENT OF CHARCOAL IMPREGNATION PROCESS FOR CW  
PROTECTIVE OVERGARMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. 25 JUN 65-24 OCT 66,  
OCT 66 41F GAGLIARDI, D. D. I  
CONTRACT: DA-19-129-AMC-675(N)  
PROJ: DA-1M643303-D547

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, CHEMICAL WARFARE  
AGENTS), (\*PROTECTIVE TREATMENTS, MANUFACTURING),  
IMPREGNATION, CHARCOAL, ISOCYANATE PLASTICS, EXPANDED  
PLASTICS, LAMINATED PLASTICS, REINFORCED PLASTICS,  
BINDERS, ADHESIVES, BONDING, TEXTILES, SCATTERING,  
ACRYLIC RESINS (U)

THIS IS A FINAL REPORT ON THE DEVELOPMENT OF A  
CHARCOAL IMPREGNATION PROCESS FOR CW PROTECTIVE  
OVERGARMENT USING ACTIVATED CARBON A DISPERSING AGENT  
AND AN ACRYLIC EMULSION POLYMER BINDER ON A  
POLYURETHANE FLAME BONDED LAMINATE FABRIC.  
LABORATORY STUDIES, PLANT TRIALS AND PRODUCTION OF  
8045 SQUARE YARDS OF FABRIC DELIVERED TO THE  
SPONSOR ARE DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-813 AB3 15/5  
IIT RESEARCH INST CHICAGO ILL

DEVELOPMENT, FABRICATION AND PROOFTESTING OF OPTIMUM  
FOOT PROTECTION AGAINST ANTIPERSONNEL MINES USING A  
SUPPLEMENTARY DEVICE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 1 FEB-30 JUL 66 ON  
PHASE 2.

DEC 66 19P FUJINAKA, E. S. MACDONALD,

J. L. I

CONTRACT: DA-19-129-QMC-379

PROJ: DA-1-K-643303-D-547

MONITOR: USA-NLABS, C/OM

TR-67-45-CM, TS-149

UNCLASSIFIED REPORT

DESCRIPTORS: (\*LAND MINES, COUNTERMEASURES),  
(\*PROTECTIVE CLOTHING, \*SHOES), DESIGN, PRODUCTION,  
COMBAT READINESS, OPTIMIZATION, ANTIPERSONNEL  
AMMUNITION (U)

THE REPORT COVERS PHASE 2 OF A PROGRAM TO DEVELOP  
A SUPPLEMENTARY ITEM OF PROTECTIVE FOOTWEAR TO BE  
USED IN CONJUNCTION WITH A PREVIOUSLY DEVELOPED  
PROTECTIVE COMBAT BOOT. IT WAS DIRECTED TOWARD  
FABRICATION OF TEST PROTOTYPES FOR BLAST EVALUATION.  
THE SUPPLEMENTARY DEVICES WERE OF TWO TYPES,  
CONCEPT A AND CONCEPT B, BOTH USING AN  
IDENTICAL SOLID ALUMINUM SHANK. CONCEPT B  
INCORPORATED A SYSTEM OF REINFORCEMENT FOR THE UPPER  
PORTION OF THE FOOT. A DISCUSSION OF PRELIMINARY  
PROOFTESTING CONSIDERATIONS IS PRESENTED. THIS  
DISCUSSION INCLUDES THE RECOMMENDATION OF TEST  
PERSONNEL, THE QUANTITY OF TESTS, AND THE PROTECTIVE  
FOOTWEAR TO BE USED DURING TESTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-814 366 6/17  
ARMY CONCEPT TEAM IN VIETNAM SAN FRANCISCO CALIF  
96243

EVALUATION OF CREW MEMBER'S IMPROVED FIRE RESISTANT  
FLIGHT COVERALLS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1-30 APR 67,  
MAY 67 16P OAKES, KEITH W. I  
PROJ: ACTIV-ACA-45/671

UNCLASSIFIED REPORT

DESCRIPTORS: (•FIRE PROTECTIVE CLOTHING, •FLIGHT  
CLOTHING), AVIATION SAFETY, FLIGHT CREWS, GASOLINE,  
BURNS(INJURIES), SKIN(ANATOMY), FIRE SAFETY, FIRE  
RESISTANT MATERIALS, FIRE RESISTANT TEXTILES, AIRCRAFT  
FIRES, SURVIVAL(PERSONNEL), VIETNAM, ACCEPTABILITY,  
MAINTAINABILITY (U)  
IDENTIFIERS: NOMEX FABRIC, SOUTH VIETNAM (U)

FLIGHT COVERALLS MADE OF AN IMPROVED NOMEX FIRE  
RESISTANT MATERIAL WERE EVALUATED BY AVIATION UNITS  
IN VIETNAM. IF CERTAIN MODIFICATIONS ARE MADE,  
THE FIRE RESISTANT COVERALL TESTED IS SERVICEABLE,  
MAINTAINABLE, AND ACCEPTABLE FOR USE BY US ARMY  
AIRCRAFT MEMBERS IN VIETNAM. SINGLE LAYER NOMEX  
HAS LITTLE BETTER FIRE RESISTANT QUALITIES THAN  
CHEMICALLY TREATED UNIFORMS. DOUBLE-LAYER NOMEX  
PROVIDES A SIGNIFICANT INCREASE IN PROTECTION OVER  
OTHER MATERIALS, TREATED OR UNTREATED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-815 845 6/17  
ARMY CONCEPT TEAM IN VIETNAM SAN FRANCISCO CALIF  
96243

TROPICAL COMBAT UNIFORM (PONCHOS AND  
GROUND CLOTHS).

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 FEB-15 APR 67.  
JUN 67 SP DLUGOS, KARL J. I  
PROJ: ACTIV-ACI-84.4/67I, ACTIV-ACL-84.3/67I

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, EFFECTIVENESS),  
(\*PROTECTIVE COVERINGS, EFFECTIVENESS),  
COUNTERINSURGENCY, ISOCYANATE PLASTICS, ACCEPTABILITY,  
SHELTERS, DESIGN, MILITARY REQUIREMENTS, TROPICAL  
REGIONS, VIETNAM

(U)

LIGHTWEIGHT PONCHOS AND GROUND CLOTHS WERE EVALUATED  
IN VIETNAM TO DETERMINE SUITABILITY, DURABILITY,  
AND ACCEPTABILITY FOR USE BY US TROOPS IN  
VIETNAM. EVEN THOUGH FABRICATION MATERIAL WAS  
DURABLE IT WAS SOMETIMES AFFECTED BY TERMITE ATTACK  
AND INSECT REPELLENT. IF MATERIALS CAN BE  
DEVELOPED WHICH WILL NOT BE AFFECTED BY TERMITES AND  
INSECT REPELLENT SPRAYS, THE LIGHTWEIGHT PONCHO  
SHOULD BE PROCURED FOR ISSUE TO US ARMY TROOPS  
OPERATING IN VIETNAM. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-R17 192 6/17  
ARMY GENERAL EQUIPMENT TEST ACTIVITY FORT LEE VA

ENGINEERING TEST OF PONCHO, LIGHTWEIGHT  
(LINCLOE).

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 67 57P CARLISLE, C. WALLACE ;  
PROJ: USATECOM-8-6-6400-01

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING,  
PERFORMANCE(ENGINEERING)), ARMY EQUIPMENT, RAIN,  
ATMOSPHERIC PRECIPITATION, DESIGN, WEIGHT, THERMOPLASTIC  
RESINS, ISOCYANATE PLASTICS, PLASTIC COATINGS, NYLON,  
WEAR RESISTANCE, MOISTUREPROOFING, LIFE EXPECTANCY,  
ACCELERATED TESTING, SIMULATION, ACCEPTABILITY,  
ABRASIVES, ADHESION, SEALS, CHEMICAL WARFARE AGENTS,  
BIOLOGICAL WARFARE AGENTS (U)  
IDENTIFIERS: LINCLOE(LIGHTWEIGHT INDIVIDUAL COMBAT  
CLOTHING AND E, PONCHOS (U)

AN ENGINEERING TEST OF PONCHO, LIGHTWEIGHT  
(LINCLOE) WAS CONDUCTED TO DETERMINE THE TECHNICAL  
PERFORMANCE AND SAFETY CHARACTERISTICS OF THE  
EXPERIMENTAL LIGHTWEIGHT PONCHO AS DESCRIBED IN THE  
QMR, WITH SPECIFIC OBJECTIVES (1) TO DETERMINE  
THE PERFORMANCE OF THE TEST ITEM IN COMPARISON WITH  
THE STANDARD PONCHO AS A RAIN GARMENT AND (2) TO  
PROVIDE A TECHNICAL ESTIMATE OF THE LIFE EXPECTANCY  
OF THE EXPERIMENTAL PONCHO IN COMPARISON WITH THE  
STANDARD PONCHO CONSIDERING THE APPLICABLE  
CHARACTERISTICS IN THE QMR AND THE INSTRUCTIONS FOR  
USE IN FM 21-15. IT WAS CONCLUDED THAT UNDER  
CONTROLLED CONDITIONS OF ACCELERATED WEAR AND  
SIMULATED RAINFALL, THE EXPERIMENTAL PONCHO HAD LESS  
MOISTURE PENETRATION IN THE SEAM AREAS THAN THE  
STANDARD PONCHO. HOWEVER, THE EXPERIMENTAL PONCHO  
HAD EXCESSIVE MOISTURE PENETRATION IN THE BASE FABRIC  
AREA WHEREAS THE STANDARD PONCHO HAD NEGLIGIBLE  
LEAKAGE IN THE BASE FABRIC AREA. IT WAS ALSO  
CONCLUDED THAT THE EXPERIMENTAL PONCHO DID NOT MEET  
THE REQUIRED MINIMUM LIFE EXPECTANCY OF 120 DAYS  
UNDER COMBAT CONDITIONS AS REQUIRED BY THE QMR.  
IT WAS RECOMMENDED THAT THE TOTAL AMOUNT OF  
POLYURETHANE COATING REQUIRED TO COAT THE OUTSIDE  
AREA OF THE EXPERIMENTAL PONCHO BE DIVIDED EQUALLY  
AND APPLIED TO BOTH SIDES OF THE BASE FABRIC,  
PROVIDING MORE UNIFORMITY TO THE COATED MATERIAL AND  
ALLOWING THE EXPERIMENTAL PONCHO TO REMAIN AT THE (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-819 964 6/17 22/1  
LITTLE (ARTHUR D) INC CAMBRIDGE MASS

RESEARCH TO ADVANCE EXTRAVEHICULAR PROTECTIVE  
TECHNOLOGY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 65-30 JUN 66.  
APR 67 169P RICHARDSON, DAVID L. 1  
CONTRACT: AF 33(615)-2963  
PROJ: AF-6301, AF-7164  
TASK: 630104, 716411  
MONITOR: AMRL TR-66-250

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXTRAVEHICULAR ACTIVITY, \*EXPOSURE  
SUITS), PROTECTIVE CLOTHING, JOINTS(PHYSIOLOGY), SPACE  
ENVIRONMENTS, ENCAPSULATION, REMOTE CONTROL, SPACE  
STATIONS, HARDNESS, LIFE SUPPORT, METABOLISM, LIQUID  
COOLED, SEALS

(U)

THE PRESENT STATE-OF-THE-ART IN EXTRAVEHICULAR  
PROTECTIVE GARMENTS AND POSSIBLE NEW APPROACHES AND  
IDEAS SUITABLE FOR DEVELOPMENT HAVE BEEN  
INVESTIGATED. RECOMMENDATIONS ARE MADE FOR  
EXPLORATORY DEVELOPMENT PROGRAMS WHICH CAN ACHIEVE  
MAJOR ADVANCEMENTS IN EXTRAVEHICULAR PROTECTIVE  
TECHNOLOGY IN THE TIME PERIOD 10 TO 15 YEARS HENCE.  
THE STUDY INCLUDES A BRIEF LOOK AT THE POSSIBLE  
MISSIONS AND TASKS, A DEFINITION OF THE PROBLEMS OF  
PROTECTING MAN IN EARTH-ORBITAL SPACE, AN ANALYSIS OF  
THE PENDING TORQUES OF JOINTS IN PRESENT SPACE SUIT  
CONSTRUCTIONS, A DISCUSSION OF TOTAL ENCAPSULATION  
AND REMOTE HANDLING TECHNIQUES AND A DISCUSSION OF  
PROPOSED ADVANCED CONCEPTS, SOME OF WHICH MAY  
CONTRIBUTE TO ADVANCEMENT OF EV PROTECTIVE  
TECHNOLOGY. THE NEXT GENERATION OF EV PROTECTIVE  
GARMENTS, FOR ACTIVITY ON OR NEAR THE SURFACE OF A  
SPACE STATION IN A 300 N.M. EARTH ORBIT, WILL  
PROBABLY BE ANTHROPOMORPHIC AND CONSIST OF (1)  
HARD-SUIT CONSTRUCTION FOR THE TORSO AND THE  
SHOULDER, WAIST AND ELBOW JOINTS, (2) SOFT-SUIT  
CONSTRUCTION BELOW THE WAIST, (3) PORTABLE LIFE  
SUPPORT COMPONENTS WHICH ARE INTEGRATED INTO THE HARD  
SHELL, (4) LIFE SUPPORT COMPONENTS WHICH CAN BE  
REPLENISHED WHILE THE ASTRONAUT IS OUTSIDE OF THE  
SPACE STATION, (5) A LIQUID-COOLED UNDERGARMENT  
FOR REMOVAL OF EXCESS METABOLIC HEAT, AND (6) AN  
EMERGENCY SEALING AND PRESSURIZATION SYSTEM WHICH IS  
AUTOMATICALLY ACTUATED IN THE EVENT OF GARMENT  
FAILURE. (AUTHOR)

197

(U)

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-819 324 6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

OPERATIONAL CHARACTERISTICS OF THE 1964  
EXTRAVEHICULAR RESEARCH MODEL FULL PRESSURE  
ASSEMBLY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 64-JAN 65,  
MAY 67 SIP ROCK, LEE C. I  
REPT. NO. AMRL-TR-66-179  
PROJ: AF-7164  
TASK: 716411

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*EXTRAVEHICULAR  
ACTIVITY), SPACE FLIGHT, FLIGHT CLOTHING, HELMETS,  
GLOVES, SHOES, DESIGN, CONSTRUCTION, INFLATABLE  
STRUCTURES, LEAKAGE (FLUID), HUMAN FACTORS ENGINEERING,  
TEMPERATURE CONTROL, BODY TEMPERATURE, ACOUSTIC  
PROPERTIES, PERFORMANCE (ENGINEERING),  
FAILURE (MECHANICS), VENTING, PRESSURE,  
PERFORMANCE (HUMAN)

(U)

THE FIRST EXTRAVEHICULAR RESEARCH MODEL FULL  
PRESSURE ASSEMBLY DESIGNED FOR OPERATION AT 5 PSIG  
WAS SUBJECTED TO A SERIES OF TESTS TO DETERMINE THE  
OPERATIONAL CHARACTERISTICS OF THE ASSEMBLY. TEST  
DATA WERE OBTAINED AT 3.5-PSIG OPERATING PRESSURE TO  
PERMIT PERFORMANCE DATA COMPARISON WITH THE A/  
P22S-2 DATA AND DATA OBTAINED ON OTHER  
EXPERIMENTAL ASSEMBLIES DESIGNED TO OPERATE AT 3.5  
PSIG. TEST DATA WERE ALSO OBTAINED AT 5-PSIG  
OPERATING PRESSURE. THESE TESTS INCLUDED THOSE  
CONSIDERED TO BE BASIC STANDARD PERFORMANCE TESTS FOR  
PROTECTIVE ASSEMBLIES. PARTICULAR EMPHASIS WAS  
PLACED ON TESTS CONDUCTED TO DETERMINE MOBILITY  
CHARACTERISTICS. IN GENERAL, THE MOBILITY OBTAINED  
WAS AN IMPROVEMENT OVER THAT OF THE A/P22S-2  
FULL PRESSURE ASSEMBLY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-823 299 6/17 22/1 5/9  
FORIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

SPACE SUITS - SPACE FASHION (RAUMANZUEGE - MODE DES  
KOSMOS). (U)

DESCRIPTIVE NOTE: UNEDITED ROUGHT DRAFT TRANSLATION,  
JUN 67 7P PFAFFE, H. I  
REPT. NO. FTD-HT-66-683

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF ARMEE-RUNDSCHAU N6 P79-  
81, 84 1965, BY J. STOCK.

DESCRIPTORS: (•PRESSURE SUITS, ASTRONAUTS), SPACE  
FLIGHT, EAST GERMANY, DESIGN, SAFETY, EXTRAVEHICULAR  
ACTIVITY, SPACECRAFT, HUMAN FACTORS ENGINEERING (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE SCIENTIFIC SECRETARY OF THE EAST GERMAN  
ASTRONAUTICAL SOCIETY H. PFAFFE, PREDICTS  
THAT ASTRONAUTS IN THE VERY NEAR FUTURE WILL EXTEND  
THE DURATION OF THEIR EXTRAVEHICULAR ACTIVITIES.  
THIS IS STATED TO BE ONE OF THE MOST PRESSING  
CURRENT PROBLEMS WHICH SPACE EXPERIMENTS ARE DESIGNED  
TO SOLVE. THE REQUIREMENT FOR ASTRONAUTS TO REMAIN  
LONGER OUTSIDE THEIR SPACECRAFT IS DUE TO SUCH  
EVENTUALITIES AS THE NEED TO REPAIR SPACECRAFT, THE  
ERECTION OF LARGE MANNED SPACE STATIONS, AND THE  
ACCOMPLISHMENT OF A MANNED LUNAR MISSION, A MANNED  
LANDING ON THE MOON'S SURFACE BEING SCHEDULED FOR  
1970. BESIDES THE METHOD OF EGRESS USED BY  
LEONOV, THRUSTERS IN THE FORM OF A 'ROCKET  
BELT' WILL ALSO BE USED TO CONTROL MOVEMENTS IN  
SPACE. COMPRESSED AIR OR HYDROGEN PEROXIDE ARE  
SUGGESTED FOR USE AS PROPELLANTS. THE 'ROCKET  
BELT' WILL BE PROVIDED WITH A STABILIZING DEVICE TO  
PREVENT THE ASTRONAUT FROM SPINNING, AS WOULD OCCUR  
IF THE IMPULSES OF THE SMALL ROCKET ENGINES DID NOT  
PASS THROUGH THE CENTER OF GRAVITY OF THE SYSTEM  
CONSISTING OF ASTRONAUT, SPACESUIT, AND EQUIPMENT.  
ANOTHER POSSIBILITY FOR WORKING OUTSIDE OF A  
SPACECRAFT IS TO USE A CAPSULE PROVIDED WITH  
MANIPULATORS. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-826 388 6/17 15/5 1/3  
ARMY CONCEPT TEAM IN VIETNAM SAN FRANCISCO CALIF 96384

EVALUATION OF FIRE RETARDANT FLIGHT GLOVES(NOMEX).  
(ACA-63/671). (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 68 8P ISAAC, JAMES E. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GLOVES, \*FIRE RESISTANT TEXTILES),  
(\*FLIGHT CLOTHING, GLOVES); NYLON, FLIGHT CREWS,  
AIRCRAFT FIRES, PROTECTION, QUESTIONNAIRES,  
ACCEPTABILITY, PERFORMANCE(ENGINEERING), LIMITED WAR,  
VIETNAM (U)  
IDENTIFIERS: NOMEX (U)

THE EVALUATION WAS CONDUCTED BECAUSE OF A  
REQUIREMENT TO AFFORD PROTECTION TO THE HANDS OF AIR  
CREWMEN WHO MAY BECOME EXPOSED TO FLASH FIRES WHILE  
IN PERFORMANCE OF THEIR AIRCREW DUTIES. THREE  
HUNDRED PAIRS OF FLIGHT GLOVES COMPOSED OF A  
COMBINATION OF 'NOMEX' MATERIAL AND CABRETTA  
LEATHER PRESENTLY IN USE BY THE US NAVY WERE  
SELECTED. THEY WERE DISTRIBUTED ON 21 AUGUST  
1967 AMONG A VARIETY OF UNITS THROUGHOUT VIETNAM  
AND USED BY AIRCREW MEMBERS UNDER VARIOUS CONDITIONS  
AND CLIMATE WHILE PERFORMING DUTIES AS AIR CREWMEN IN  
A VARIETY OF AIRCRAFT. A QUANTITATIVE AND  
QUALITATIVE ANALYSIS WAS MADE THROUGH THE USE OF  
QUESTIONNAIRES TO DETERMINE SUITABILITY, RUGGEDNESS,  
COMFORT, ACCEPTANCE AND UTILITY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-835 066 15/5  
TACTICAL AIRLIFT CENTER POPE AFB N C

QUICK DONNING FLIGHT BOOT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 23 OCT 67-23 FEB 68.  
JUN 68 27P CAMP. JAMES B. ;  
MONITOR: TAC TEST-67-234

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, SHOES), (\*SHOES,  
ACCEPTABILITY), DESIGN, LIFE EXPECTANCY, PERMEABILITY,  
WATER, LUBRICANTS, OILS, FASTENINGS (U)

THE OBJECTIVES OF THIS TEST WERE TO DETERMINE THE  
OPERATIONAL SUITABILITY AND AIRCREW ACCEPTABILITY OF  
THE QUICK DONNING FLIGHT BOOT AS WELL AS TO IDENTIFY  
ANY DESIGN DEFICIENCIES OR MAINTENANCE PROBLEM AREAS.  
IT WAS CONCLUDED THAT THE BOOT IS SATISFACTORY FOR  
AIRCREW USE AND IS RECOMMENDED FOR PROCUREMENT AFTER  
THE ADOPTION OF A DIFFERENT NON-SKID SOLE AND HEEL.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-R35 403 6/17 15/5  
ARMY GENERAL EQUIPMENT TEST ACTIVITY FORT LEE VA

ENGINEERING TEST OF JUNGLE HAT WITH HEADNET. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 68 37P LAUGHLIN, ROBERT C. I  
PROJ: RDT/F-1-J-643303-D-547, USATECOM-866415  
TASK: 1-J-643303-D-54734, 86641501

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TROPICAL REGIONS),  
(\*HEADGEAR, JUNGLES), TROPICAL TESTS, MOISTUREPROOFING,  
DETERIORATION, ARMY EQUIPMENT, SHRINKAGE,  
DEFECTS(MATERIALS), COLORING, LIFE EXPECTANCY, NETS,  
MAINTENANCE, LAUNDRY OPERATIONS, ENVIRONMENTAL TESTS,  
VISUAL INSPECTION, WEAR RESISTANCE, WEIGHT,  
CONFIGURATION, COTTON TEXTILES, NYLON, VIETNAM (U)  
IDENTIFIERS: SIZES(DIMENSIONS), SOUTH VIETNAM (U)

AN ENGINEERING TEST OF A JUNGLE HAT WITH  
HEADNET WAS CONDUCTED TO DETERMINE THE TECHNICAL  
PERFORMANCE AND SAFETY CHARACTERISTICS OF THE TEST  
ITEM AS DESCRIBED IN THE SDR AND AS INDICATED BY  
THE PARTICULAR DESIGN AND TO DETERMINE THE TECHNICAL  
AND MAINTENANCE SUITABILITY OF THE JUNGLE HAT  
WITH HEADNET FOR SERVICE TESTING. IT WAS  
CONCLUDED THAT THE JUNGLE HAT WITH HEADNET IS  
SUITABLE FOR SERVICE TESTING. IT WAS  
RECOMMENDED THAT THE HATS BE MARKED: \*FOR HAND  
LAUNDERING ONLY\*. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-835 549 6/17 15/5  
ARMY GENERAL EQUIPMENT TEST ACTIVITY FORT LEE VA

ENGINEERING TEST OF BOOT, COMBAT, MOUNTAIN AND  
SKI. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 68 33P MANGUM, EDWIN W. I  
PROJ: RDT/E-1-J-643303-D-547, USATECOM-837020  
TASK: 1-J-643303-D-54712-D, 83702006

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, ENVIRONMENTAL  
TESTS), (\*SHOES, MOUNTAINS), SOCKS, MAINTENANCE,  
MOISTUREPROOFING, VISUAL INSPECTION, THERMAL INSULATION,  
LEATHER, COLD WEATHER TESTS, ARMY EQUIPMENT, MILITARY  
REQUIREMENTS, HEAT TRANSFER, PROTECTION, FIRE RESISTANT  
MATERIALS, FIRE PROTECTIVE CLOTHING (U)  
IDENTIFIERS: SIZES(DIMENSIONS), TEMPERATURE  
CYCLING (U)

AN ENGINEERING TEST OF THE BOOT, COMBAT,  
MOUNTAIN AND SKI, WAS CONDUCTED TO EVALUATE THE  
MODEL NO. 1070 BOOT; TO EVALUATE THE SIZING AND  
FITTING CHARACTERISTICS IN CONSIDERATION OF THE  
TECHNICAL CHARACTERISTICS; AND TO PROVIDE  
TECHNICAL ASSISTANCE TO THE U. S. ARMY ARCTIC  
TEST CENTER (USAATC) IN THE INITIAL FITTING AND  
ISSUE OF THE TEST ITEM IN THAT PHASE OF THE SERVICE  
TEST. IT WAS CONCLUDED THAT THE MODEL 1070  
MOUNTAIN AND SKI BOOT IS SATISFACTORY AS TO THE  
TECHNICAL CHARACTERISTICS INCLUDED IN THE QMR  
FOR THE SYSTEM OF LIGHTWEIGHT CLOTHING AND  
EQUIPMENT (LINCLOE) FOR WHICH TESTS WERE  
CONDUCTED. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-938 627 6/17 5/9  
TACTICAL AIR WARFARE CENTER EGLIN AFB FLA

VENTILE ANTI-EXPOSURE SUIT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 68 15P HENRIE, GORDON C. ;  
MONITOR: TAC TEST-68-203

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXPOSURE SUITS, SURVIVAL (PERSONNEL)),  
(\*FLIGHT CREWS, EXPOSURE SUITS), PERMEABILITY, DESIGN,  
HUMAN FACTORS ENGINEERING, FLIGHT CLOTHING,  
ACCEPTABILITY, ADAPTATION (PHYSIOLOGY), QUESTIONNAIRES,  
JET FIGHTERS, ARCTIC REGIONS, COLD WEATHER TESTS,  
COMPATIBILITY, WEAR RESISTANCE, VENTILATION, THERMAL  
INSULATION, SHOES, FASTENINGS

(U)

IDENTIFIERS: F-4 AIRCRAFT, ZIPPERS

(U)

THE PURPOSE OF TAC TEST 68-203, VENTILE ANTI-EXPOSURE SUIT, WAS TO DETERMINE THE COMFORT AND COMPATIBILITY OF THIS SUIT WHEN USED IN THE TACTICAL FIGHTER MISSION. THIS TEST WAS PERFORMED AT THE REQUEST OF THE AIR DEFENSE COMMAND (ADC) AND WAS A PORTION OF THE OVERALL VENTILE ANTI-EXPOSURE SUIT TEST PERFORMED BY ADC. MEMBERS OF THE 33 TAC FTR WG WORE THE VENTILE SUIT ASSEMBLY ON ALL TYPES OF MISSIONS IN F-4 AIRCRAFT. DATA WERE COLLECTED USING DAILY QUESTIONNAIRES, PLUS A MORE DETAILED QUESTIONNAIRE ADMINISTERED 30 DAYS AFTER THE TEST BEGAN. UPON COMPLETION OF THE TEST, EACH PILOT PROVIDED A STATEMENT COVERING PROBLEMS ENCOUNTERED, RECOMMENDATIONS FOR IMPROVEMENT, AND AN OVERALL STATEMENT OF ACCEPTANCE OR REJECTION OF THE SUIT DESIGN. ALL PILOTS INVOLVED IN TESTING THE SUIT STATED IT WAS ACCEPTABLE. PROBLEM AREAS WERE FOUND AND RECOMMENDATIONS SUBMITTED. AFTER THESE PROBLEMS ARE CORRECTED, THIS EXPOSURE SUIT IS RECOMMENDED FOR AIR FORCE PURCHASE.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-839 425 6/17 13/8  
UNIROYAL INC WASHINGTON IND CONSUMER AND INDUSTRIAL  
PRODUCTS DIV

FULL PRESSURE SUIT FOR SPACE CREWS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 25 JUL 64-23 APR 67.  
JUL 68 29P BOYD, H. D. IRUNYAN, B. F.

CONTRACT: AF 33(615)-1762  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-67-215

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, \*SPACE CREWS), DESIGN,  
MOBILITY, UNDERWEAR, VENTILATION, JOINTS, MANUFACTURING (U)

THE PURPOSE OF THIS INVESTIGATION WAS TO CONDUCT A  
RESEARCH AND DEVELOPMENT PROGRAM ON FULL PRESSURE  
SUIT MOBILITY TO EVOLVE NEW TECHNIQUES AND DESIGNS TO  
BE USED IN FABRICATION OF FULL PRESSURE SUITS USING  
THE CORD RESTRAINED PRINCIPLE. THREE WORKING  
LABORATORY MODELS WERE FURNISHED WITH MOBILITY JOINTS  
THAT INCORPORATED CORD, RING AND STRETCH MATERIAL  
COMBINATIONS. A VENTILATION LINER, FURNISHED WITH  
THE GARMET PROVIDED SUFFICIENT AIR FLOW TO MAINTAIN  
AN ATMOSPHERE ADEQUATE FOR THE PHYSIOLOGICAL WELL-  
BEING OF THE WEARER. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-841 293 15/2 6/17  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

STORAGE OF CHEMICAL AGENTS (I). SPECIAL CLOTHING FOR  
WORKING IN WAREHOUSES (II). (U)

68 11P PANAFIDIN, K. A. ; KOBRIYS,  
G. A. ;  
REPT. NO. FSTC-HT-23-352-68  
PROJ: FSTC-82236272301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF ZASHCHITA RASTENII  
(USSR) N12 P35-38 1967, BY GEROGE G.  
WEICKHARDT.

DESCRIPTORS: (\*CHEMICAL WARFARE AGENTS, STORAGE), (\*ARMY  
PERSONNEL, PROTECTIVE CLOTHING), HANDLING, WAREHOUSES,  
VENTILATION, WALLS, COTTON, PENETRATION, DUST, PLASTIC  
COATINGS, HUMIDITY, ATMOSPHERIC TEMPERATURE, SAFETY,  
PERSONNEL, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE TWO-PART ARTICLE CONCERNS THE STORAGE OF  
CHEMICAL AGENTS AND SPECIAL CLOTHING FOR WORKING IN  
WAREHOUSES WHERE THESE CHEMICALS ARE STORED.  
VOLATILE CHEMICALS MUST BE STORED IN DRY, WELL-  
VENTILATED WAREHOUSES OF THICK WALLS AND SMOOTH  
CONCRETE FLOORS. THE CHEMICALS ARE STORED IN  
CONTAINERS (ACCORDING TO THE NATURE OF THE  
CHEMICAL) AND STORED SEPARATELY ACCORDING TO  
DESIGNATION. PERSONNEL WORKING IN THESE WAREHOUSES  
MUST WEAR GOOD PROTECTIVE CLOTHING TO PREVENT THE  
VOLATILE CHEMICALS FROM COMING INTO CONTACT WITH  
THEM. COVERALLS OF COTTON, WHICH ARE IMPENETRABLE  
BY DUST, RUBBERIZED OR PLASTIC-COATED APRON AND  
BREASTPLATE, COMBINATION MITTENS, AND A COTTON HOOD  
MAKE UP THE STANDARD UNIFORM. VARIATIONS OF THESE,  
PLUS ADDITIONAL CLOTHING FOR WORKING DURING THE  
WINTER ARE ALSO MENTIONED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-842 833 6/17 22/2  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

EVALUATION OF MANNED ORBITING LABORATORY  
DESIGN DEFINITION PRESSURE GARMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JAN-SEP 66.  
JUL 68 65P BOWEN, J. DONALD ;  
REPT. NO. AMRL-TR-66-235  
PROJ: AF-7164  
TASK: 716411

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, SPACE STATIONS),  
PERFORMANCE(ENGINEERING), CONFIGURATION, SAFETY, MANNED  
SPACECRAFT, TEST METHODS, HUMAN FACTORS ENGINEERING,  
MOBILITY, TABLES(DATA)

(U)

IDENTIFIERS: EVALUATION, \*MOL(MANNED ORBITING  
LABORATORIES)

(U)

FOUR DESIGN DEFINITION PRESSURE SUITS PROCURED IN  
CONNECTION WITH THE MANNED ORBITING LABORATORY  
PROGRAM WERE INVESTIGATED. THESE PRESSURE GARMENT  
ASSEMBLIES WERE DESIGNED TO FIT IN WITH THE PROPOSED  
CREW CABINS AND RELATED EQUIPMENT AS WELL AS TO  
SATISFY SAFETY AND FUNCTIONAL REQUIREMENTS  
ANTICIPATED FOR THE TWO MAN CREW. THE REPORT  
DESCRIBES THE PRESSURE GARMENT ASSEMBLIES, GIVES SOME  
OF THE LOGIC INVOLVED IN DESIGN SELECTION, REVIEWS  
THE EVALUATION PROCEDURES, AND PRESENTS THE RESULTS  
OBTAINED IN THE BATTERY OF TESTS. CONCLUSIONS  
COVER THE GENERAL CHARACTERISTICS AND SHORTCOMINGS OF  
THE ASSEMBLIES AND OFFER AN UNOFFICIAL ESTIMATE OF  
THE GENERAL SUITABILITY FOR THE MOL PROGRAM.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-844 923 6/17

NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

CHEMICAL HEAT SOURCE FOR WET SUITS.

(U)

DESCRIPTIVE NOTE: INTERIM REPT. FEB-OCT 68,

NOV 68 24P HEARST, PETER J. :

REPT. NO. NCEL-TN-998

PROJ: Z-R011-01-01-122

UNCLASSIFIED REPORT

DESCRIPTORS: (•UNDERWATER CLOTHING, HEATING), CHEMICALS,  
SOURCES, DIVING, EXPOSURE(PHYSIOLOGY), HEAT OF REACTION,  
CRYSTALLIZATION, LITHIUM COMPOUNDS, NITRATES, HYDRATES,  
MODELS(SIMULATIONS), MAINTENANCE, CONSTRUCTION (U)

IDENTIFIERS: GRAPHS(CHARTS) (U)

AN INTERNAL CHEMICAL HEAT SOURCE FOR WET SUITS,  
BASED ON THE HEAT OF CRYSTALLIZATION OF A CHEMICAL OR  
MIXTURE OF CHEMICALS, HAS BEEN PROPOSED. INITIAL  
EXPERIMENTS INDICATE THAT THIS METHOD SHOWS  
CONSIDERABLE PROMISE, AND LITHIUM NITRATE TRIHYDRATE,  
M.P. 30C (86F), IS A GOOD CANDIDATE MATERIAL.  
THE INSIDE OF SAMPLE SUITING CONTAINING THIS  
MATERIAL WAS MAINTAINED WITHIN A FIVE-DEGREE RANGE  
FOR FIFTY MINUTES WHEN IMMERSSED IN ICE WATER.  
PRELIMINARY TESTS WITH PROTOTYPE VESTS HAVE BEEN  
PERFORMED AND FURTHER INVESTIGATIONS ARE PLANNED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-846 419 6/17  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT

A METHOD AND RATING SYSTEM FOR EVALUATION OF  
THERMAL PROTECTION.

(U)

DEC 68 25P STOLL, ALICE M. ICHIANTA,  
MARIA A. ;  
REPT. NO. NADC-MR-6809  
PROJ: A34531/202/69F3253401

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, \*THERMAL  
INSULATION), TEXTILES, BURNS(INJURIES), PAIN,  
PHYSIOLOGY, THERMAL RADIATION

(U)

THERMAL PROTECTION RATING SYSTEMS FOR FABRICS,  
BASED ON PAIN AND BLISTER EFFECTS IN HUMAN SKIN, ARE  
CONSIDERED IN TERMS OF: (1) PRECISE EVALUATIONS  
APPLICABLE TO ANY KNOWN TEMPERATURE-TIME PATTERN, AND  
(2) SIMPLE LABORATORY PROCEDURES TO PROVIDE A  
UNIVERSALLY USEFUL STANDARD RATING SYSTEM. THE  
FIRST SYSTEM WHICH IS MORE COMPREHENSIVE IS DIFFICULT  
AND REQUIRES COMPUTER OPERATIONS ROUTINELY. THE  
SECOND, DESCRIBED IN DETAIL, OFFERS A RATING SYSTEM  
WHICH IS SIMPLE, DIRECTLY RELATED TO PAIN AND BLISTER  
PARAMETERS, AND MAY BE UNDERSTOOD BY THE UNINITIATED  
AS WELL AS THOSE KNOWLEDGEABLE IN THE FIELD.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-848 605 6/17 5/9  
ASTRO RESEARCH CORP SANTA BARBARA CALIF

SLIP NET MOBILITY JOINTS FOR PRESSURE  
SUITS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 APR 67-31 MAY 68,  
NOV 68 96P FRASER, A. F. PREISWERK, P.

R. ;  
REPT. NO. ARC-R-286  
CONTRACT: F33615-67-C-1586  
PROJ: AF-7164  
TASK: 716411  
MONITOR: AMRL TR-68-94

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPACE ENVIRONMENTS, LIFE SUPPORT),  
(\*SPACE CREWS, PRESSURE SUITS), MANNED SPACECRAFT,  
FATIGUE(MECHANICS), DACRON, JOINTS(PHYSIOLOGY),  
MODELS(SIMULATIONS), HUMAN FACTORS ENGINEERING

(U)

THE RESULTS OF A 1-YEAR EXPERIMENTAL PROGRAM TO  
DEVELOP AND EVALUATE FABRIC CONSTRAINT LAYERS FOR  
PRESSURIZABLE SUITS ARE DESCRIBED. THE PRINCIPAL  
OBJECT OF THE DEVELOPMENT WAS TO PRODUCE SOFT-  
PRESSURE-SUIT COMPONENTS WITH MINIMUM CONSTRAINT TO  
MOTION AND WITH MAXIMUM RANGE OF MOTION. A  
SECONDARY GOAL WAS TO DEVELOP JOINT DESIGNS THAT  
ALLOW THE USER TO MAINTAIN DISPLACED POSITIONS OF THE  
LIMBS WITH MINIMUM USE OF SUSTAINING FORCE.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-850 180 15/5 6/17  
ARMY GENERAL EQUIPMENT TEST ACTIVITY FORT LEE VA

ENGINEERING TEST OF CLOTHING SYSTEM (SUMMER  
UNIFORM) FOR ARMY AVIATION CREW  
MEMBERS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 68 73P MERCER, DONALD G. ;  
PROJ: RDT/F-1-M-643303-D-547, USATECOM-46530004

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ORIGINAL CONTAINS COLOR PLATES;  
ALL DDC REPRODUCTIONS WILL BE IN BLACK AND WHITE.  
ORIGINAL MAY BE SEEN IN DDC HEADQUARTERS.

DESCRIPTORS: (\*FLIGHT CLOTHING, ENVIRONMENTAL TESTS),  
(\*CLOTHING, ACCEPTABILITY), FLIGHT CREWS, STATIC  
ELECTRICITY, COLORS, FASTENINGS, TEXTILES, TENSILE  
PROPERTIES, POLYAMIDE PLASTICS, LAUNDRY OPERATIONS,  
NYLON, HUMIDITY, ATMOSPHERIC TEMPERATURE, HEAT  
TOLERANCE, SKIN (ANATOMY), AVIATION SAFETY, FIRE SAFETY,  
WEIGHT, INFRARED RADIATION, GLOVES, SHOES, VENTILATION,  
OBSERVATION AIRCRAFT, HELICOPTERS (U)  
IDENTIFIERS: SUMMER UNIFORMS, UNIFORMS (U)

AN ENGINEERING TEST OF CLOTHING SYSTEM  
(SUMMER UNIFORM) FOR ARMY AVIATION CREW  
MEMBERS WAS CONDUCTED DURING THE PERIOD 10 JUNE -  
15 NOVEMBER 1968 TO DETERMINE THE TECHNICAL  
PERFORMANCE AND SAFETY CHARACTERISTICS AS DESCRIBED  
IN THE SDR, THE TECHNICAL CHARACTERISTICS, AND  
AS INDICATED BY THE PARTICULAR DESIGN, AND TO  
DETERMINE THE TECHNICAL AND MAINTENANCE SUITABILITY  
OF THE UNIFORM FOR SERVICE TEST. IT WAS CONCLUDED  
THAT: THE SUMMER UNIFORM, AS DESCRIBED IN THE  
REPORT, MEETS THE OPERATIONAL REQUIREMENTS TO A  
DEGREE SUFFICIENT TO WARRANT SERVICE TESTING. IT  
WAS RECOMMENDED THAT: THE SLEEVE FASTENER BE  
ALTERED TO ALLOW A SNUG FIT; THE PATCH-TYPE SLEEVE  
POCKET ZIPPER BE REPLACED WITH A VELCRO FASTENER  
ALLEVIATING THE ACCESSIBILITY PROBLEM; SERIOUS  
CONSIDERATION BE GIVEN TO FAILURE OF MATERIAL TO  
EXHIBIT A HIGH DEGREE OF LIGHT FASTNESS NOT ONLY TO  
THE RESULTANT COLOR CHANGE, BUT ALSO TO THE EXTREME  
LOSS OF STRENGTH BEFORE THE UNIFORM IS APPROVED FOR  
ISSUE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-856 281 6/17 19/3  
ARMY ARMOR AND ENGINEER BOARD FORT KNOX KY

SERVICE TEST OF FUNCTIONAL UNIFORM FOR  
ARMORED VEHICLE CREWMEN (SUMMER).

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY-OCT 68,  
FEB 69 44P KLEIN, JOHN M. ISTERRETT,  
DALE E. I  
PROJ: RDT/E-1-M-643303-D-547, USATECOM-18786131  
TASK: 1-M-643303-D-54735

UNCLASSIFIED REPORT

DESCRIPTORS: (•PROTECTIVE CLOTHING, ARMY PERSONNEL),  
(•FIRE PROTECTIVE CLOTHING, ARMORED VEHICLES), HUMAN  
FACTORS ENGINEERING, CLOTHING, GASPROOF CLOTHING,  
CHEMICAL WARFARE AGENTS, RESPONSE(BIOLOGY),  
ACCEPTABILITY, COMPATIBILITY, DESERT TESTS,  
MAINTAINABILITY, POLYAMIDE PLASTICS, FASTENINGS,  
DEFECTS(MATERIALS), LIFE EXPECTANCY, TANKS(COMBAT  
VEHICLES), LAUNDRY OPERATIONS (U)  
IDENTIFIERS: ARMORED VEHICLES, PASSENGER VEHICLES, M-  
113 VEHICLES, M-114 VEHICLES, M-551 VEHICLES, M-60  
TANKS, SIZES(DIMENSIONS), SUMMER (U)

THE TEST OBJECTIVE WAS TO DETERMINE THE SUITABILITY  
OF THE SUMMER FUNCTIONAL UNIFORM FOR US ARMY USE.  
TESTING WAS CONDUCTED ON ARMORED VEHICLES INCLUDING  
M113 SERIES ARMORED PERSONNEL CARRIERS,  
M60 SERIES TANKS, M114 SERIES COMMAND AND  
RECONNAISSANCE CARRIERS AND M551 SHERIDAN  
VEHICLES FOR A TOTAL OF 113 WEAR DAYS AND 29  
LAUNDERINGS. THE UNIFORM MET SPECIFIED CRITERIA OF  
THE SDR EXCEPT FOR SIZE, DURABILITY (LIFE OF 12  
MONTHS) AND THE CAPABILITY OF BEING CLEANED IN THE  
FIELD WITHOUT APPRECIABLE CHANGE IN SIZE, PROTECTION,  
OR COLOR. EIGHT DEFICIENCIES AND TWO SHORTCOMINGS  
WERE REVEALED. DEFICIENCIES WERE CATEGORIZED AS  
ONE IN SIZING, THREE IN SEAM FAILURES, TWO ZIPPER  
FAILURES, AND TWO HUMAN FACTORS. THE USAAREND  
CONCLUDED THAT THE SUMMER FUNCTIONAL UNIFORMS FOR  
ARMORED VEHICLE CREWMEN REQUIRE CORRECTION OF THE  
DEFICIENCIES TO MAKE THEM SUITABLE FOR ARMY USE  
UNDER INTERMEDIATE CLIMATIC CONDITIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-856 438 6/17 19/3  
ARMY GENERAL EQUIPMENT TEST ACTIVITY FORT LEE VA

ENGINEERING TEST OF FUNCTIONAL SUMMER  
UNIFORM FOR ARMORED VEHICLE CREWMEN.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 68-MAR 69.  
JUN 69 109P BECKER, JACK M. I  
PROJ: RDT/E-1-A-650212-D-618, USATECOM-18786101

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE PROTECTIVE CLOTHING, ARMORED  
VEHICLES), (\*PROTECTIVE CLOTHING, ENVIRONMENTAL TESTS),  
SAFETY, MAINTAINABILITY, HUMAN FACTORS ENGINEERING,  
DEFECTS(MATERIALS), WEAR RESISTANCE, HEAT TOLERANCE,  
SHRINKAGE, STATIC ELECTRICITY, REFLECTIVITY, COLORS,  
LAUNDRY OPERATIONS, POLYAMIDE PLASTICS, ACCEPTABILITY,  
GASPROOF CLOTHING, TROPICAL TESTS (U)  
IDENTIFIERS: SUMMER (U)

THE ENGINEERING TEST OF THE FUNCTIONAL  
SUMMER UNIFORM FOR ARMORED VEHICLE CREWMEN  
WAS CONDUCTED TO DETERMINE ITS TECHNICAL PERFORMANCE  
AND SAFETY CHARACTERISTICS AND TO DETERMINE THE  
TECHNICAL AND MAINTENANCE SUITABILITY OF THE UNIFORM  
FOR SERVICE TEST. IT WAS CONCLUDED THAT THE SUMMER  
UNIFORM MEETS THE OPERATIONAL REQUIREMENTS TO A  
DEGREE SUFFICIENT TO WARRANT SERVICE TESTING. THE  
ONLY KNOWN USER SAFETY HAZARD IS WHEN THE FABRIC  
IDENTIFICATION TAGS ARE STAPLED TO THE INNER LAYER  
AND ARE NOT REMOVED FROM THE UNIFORMS. IT IS  
RECOMMENDED THAT: THE SHORTCOMINGS BE CORRECTED; A  
CHECK SIZING AND FITTING STUDY BE CONDUCTED TO  
ESTABLISH ADEQUACY OF PATTERN CORRECTIONS; AND  
LIMITED ADDITIONAL CHECK TESTING BE CONDUCTED TO  
ESTABLISH EFFECTIVENESS OF OTHER CORRECTIVE ACTIONS. (U)

UNCLASSIFIED

DNC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-856 542 6/17 22/2  
DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE  
AND SPACE SYSTEMS DIV

MOL ZERO G DEVELOPMENT TEST REPORT. DD  
FORM 1423 DATA ITEM UT-(110).

(U)

APR 67 23P  
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MANNED SPACECRAFT, WEIGHTLESSNESS),  
(\*SPACE STATIONS, WEIGHTLESSNESS), (\*PRESSURE SUITS,  
SPACE CREWS), SPACE CAPSULES, SAFETY BELTS, MODEL TESTS,  
TEST METHODS, PERFORMANCE(HUMAN), HELMETS, SHOES, GLO(U)  
IDENTIFIERS: GEMINI, \*GEMINI B PROJECT, \*MANNED  
ORBITING LABORATORIES, \*MOL(MANNED ORBITING  
LABORATORIES)

(U)

THE REPORT DESCRIBES THE PRESSURE SUIT  
DONNING TESTS PERFORMED BY THE CREW STATIONS  
UNASSISTED IN A MOCK-UP OF THE MOL SUIT STOWAGE  
AREA DURING ZERO GRAVITY CONDITIONS. THE OBJECT OF  
THESE TESTS WAS TO DETERMINE THE SUITABILITY OF THE  
SPACE ALLOTTED FOR SUIT DONNING UNDER ACTUAL ZERO-G  
CONDITIONS AND TO EVALUATE VARIOUS PROPOSED  
RESTRAINTS FOR SUIT, HELMET, GLOVES, AND BOOTS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-A56 632 6/17  
ARMY ARMOR AND ENGINEER BOARD FORT KNOX KY

SERVICE TEST OF FUNCTIONAL UNIFORM FOR  
ARMORED VEHICLE CREWMEN (WINTER).

(U)

DESCRIPTIVE NOTE: FINAL REPT. DEC 68-MAY 69,  
JUL 69 39P PESCI, ROBERT A. IDUNHAM,  
LAWRENCE E. I  
PROJ: RDT/E-1-M-643303-D-547, USATECOM-18786132  
TASK: 1-M-643303-D-54735

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EXPOSURE SUITS, COLD WEATHER TESTS),  
(\*ARMY PERSONNEL, EXPOSURE SUITS), ARMORED VEHICLES,  
TANKS (COMBAT VEHICLES), PROTECTIVE CLOTHING,  
ACCEPTABILITY, WEAR RESISTANCE, MANEUVERABILITY, SAFETY,  
LAUNDRY OPERATIONS, MOISTUREPROOFING, SHRINKAGE,  
FASTENINGS (U)  
IDENTIFIERS: ARMORED VEHICLES, PASSENGER VEHICLES,  
MILITARY UNIFORMS, M-114 VEHICLES, M-113 VEHICLES, M-  
551 VEHICLES, M-60 TANKS (U)

TEST OBJECTIVE WAS TO DETERMINE THE SUITABILITY OF  
THE WINTER FUNCTIONAL UNIFORM FOR US ARMY USE.  
TESTING WAS CONDUCTED ON ARMORED VEHICLES INCLUDING  
M113 SERIES ARMORED PERSONNEL CARRIERS,  
M60 SERIES TANKS, M114 SERIES COMMAND AND  
RECONNAISSANCE CARRIERS, AND THE M551 ARMORED  
RECONNAISSANCE/AIRBORNE ASSAULT VEHICLES FOR  
A TOTAL OF 83 WEAR DAYS AND 22 LAUNDERINGS. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-856 673 6/17 13/7 22/2  
MCDONNELL CO ST LOUIS MO

REVERSE PRESSURE EFFECT ON SUIT DEMAND  
REGULATOR. (U)

DESCRIPTIVE NOTE: FINAL REPT.

MAR 68 14P

REPT. NO: 058-ATC.06

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MANNED SPACECRAFT, PRESSURE SUITS),  
(\*SPACE STATIONS, PRESSURE SUITS), (\*PRESSURE SUITS,  
\*PRESSURE REGULATORS), SPACE CAPSULES, PNEUMATIC VALVES,  
OXYGEN, ENVIRONMENTAL TESTS, RELIABILITY (U)

IDENTIFIERS: GEMINI, \*GEMINI B PROJECT, \*MANNED  
ORBITING LABORATORIES, \*MOL(MANNED ORBITING  
LABORATORIES) (U)

A GEMINI B SUIT OXYGEN DEMAND AND  
RELIEF REGULATOR VALVE, P/N 52-83700-1171,  
WAS EXPOSED TO A SIMULATED CABIN PRESSURE OF 0.1 PSIA  
FOR 33 DAYS. THE GAS SUPPLY TO THE REGULATOR WAS  
CLOSED DURING THE 33 DAY EXPOSURE, PERMITTING THE  
SIMULATED SUIT CIRCUIT PRESSURE TO DECAY TO 0.1 PSIA.  
FOLLOWING THE 33 DAY EXPOSURE THE REGULATOR OUTLET  
DEMAND DIAPHRAGM WAS SUBJECTED TO A REVERSE  
PRESSURIZATION OF 3.5 PSI SIMULATING THE REACTIVATION  
OF THE GEMINI B ENVIRONMENTAL CONTROL  
SYSTEM. THESE TESTS WERE PERFORMED TO  
DEMONSTRATE THAT THE QUALIFIED NASA GEMINI  
REGULATOR VALVE WOULD OPERATE SATISFACTORY WHEN  
EXPOSED TO THE GEMINI B CONDITIONS OF ORBITAL  
STORAGE AND REVERSE PRESSURE. FUNCTIONAL TESTS  
PERFORMED ON THE REGULATOR BEFORE AND AFTER THE 33  
DAY EXPOSURE INDICATED THAT THE REGULATOR PERFORMANCE  
WAS SATISFACTORY EXCEPT THAT THE MAXIMUM SUIT  
PRESSURE CONTROL POINT AFTER THE EXPOSURE WAS OUT OF  
SPECIFICATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-856 891 6/17 13/1 22/2  
MCDONNELL CO ST LOUIS MO

CONDENSATE WETTING OF SUIT HEAT EXCHANGER  
WATER SEPARATOR PLATES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

JUL 67 21P

REPT. NO: 058-ATC.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MANNED SPACECRAFT, HEAT EXCHANGERS),  
(\*SPACE STATIONS, HEAT EXCHANGERS), (\*HEAT EXCHANGERS,  
WETTING), (\*PRESSURE SUITS, HEAT EXCHANGERS), SPACE  
CAPSULES, SPACE SIMULATION CHAMBERS, STORAGE (U)  
IDENTIFIERS: GEMINI, \*GEMINI B PROJECT, \*MANNED  
ORBITING LABORATORIES, \*MOL(MANNED ORBITING  
LABORATORIES) (U)

IT IS ANTICIPATED THAT THE WATER SEPARATOR PLATES  
IN THE SUIT HEAT EXCHANGER WILL BECOME DRY DURING THE  
ORBITAL STORAGE PHASE OF THE GEMINI 'B' MISSION.  
DRY WATER SEPARATOR PLATES PROVIDE A PATH FOR  
LEAKAGE OF CABIN ATMOSPHERE THROUGH THE SUIT HEAT  
EXCHANGER CONDENSATE OUTLET LINE TO THE WATER  
EVAPORATOR AND THEN OVERBOARD THROUGH THE RELIEF  
VALVE. THE PURPOSE OF THIS TEST WAS TO DETERMINE  
THE FEASIBILITY OF WETTING THE WATER SEPARATOR PLATES  
IN A DRY SUIT HEAT EXCHANGER WITH THE CONDENSATE  
NORMALLY COLLECTED WITHIN THE UNIT. THIS WAS DONE  
BY SUBJECTING THE HEAT EXCHANGER TO CONDITIONS THAT  
SIMULATED ITS OPERATION IN THE SPACECRAFT AND  
CONCURRENTLY MEASURING THE WATER OUTPUT AND GAS  
LEAKAGE THROUGH THE WATER SEPARATOR PLATES.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-857 571 6/17 19/3  
ARMY TROPIC TEST CENTER FORT CLAYTON CANAL ZONE

TROPIC SERVICE TEST OF FUNCTIONAL UNIFORM  
FOR ARMORED VEHICLE CREWMEN.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 20 APR-15 DEC 68,  
MAY 69 53P VAUGHN, CHARLES W. JURCZAK,  
RAY A. I  
REPT. NO. USATTC-6903002  
PROJ: RDT/E-1-M-643303-D-547, USATECOM-18786180  
TASK: 1-M-643303-D-54735

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMORED VEHICLES, PROTECTIVE CLOTHING),  
(\*PROTECTIVE CLOTHING, TROPICAL TESTS), (\*ARMY  
PERSONNEL, PROTECTIVE CLOTHING), DEFECTS(MATERIALS),  
HUMAN FACTORS ENGINEERING, HUMIDITY, HEAT, WEAR  
RESISTANCE, MAINTAINABILITY, SELF PROPELLED GUNS,  
POLYAMIDE PLASTICS, FASTENINGS  
IDENTIFIERS: M-42 GUNS(40-MM), SUMMER

(U)  
(U)

THE PURPOSE OF THE TEST WAS TO DETERMINE THE  
SUITABILITY OF THE ARMORED VEHICLE CREWMEN'S  
UNIFORM FOR USE BY THE US ARMY IN A NATURAL  
HUMID TROPIC ENVIRONMENT. THE UNIFORM WAS TESTED  
USING PERSONNEL REPRESENTATIVE OF THOSE WHO WOULD  
NORMALLY WEAR THE UNIFORM TO PERFORM THEIR DUTIES.  
TESTS WERE CONDUCTED TO DETERMINE FUNCTIONAL  
SUITABILITY, MAINTAINABILITY, AND DURABILITY.  
DURING THE TEST, TEST PARTICIPANTS RELATED THEIR  
APPRAISAL OF THE TEST UNIFORM TO THE STANDARD FIELD  
UNIFORM. RECORDERS FROM THE US ARMY TROPIC  
TEST CENTER MADE OBSERVATIONS AND ADMINISTERED  
QUESTIONNAIRES TO COLLECT DATA FOR THIS TEST.  
DURING THE TEST ONE DEFICIENCY AND THREE  
SHORTCOMINGS WERE FOUND. THE DEFICIENCY WAS  
UNSUITABILITY FOR USE IN HUMID TROPIC ENVIRONMENT DUE  
TO LACK OF TROOP ACCEPTANCE. THE FIRST TWO  
SHORTCOMINGS INVOLVED FAILURES OF SLIDE FASTENERS ON  
THE DROP SEAT AND BREAST POCKET. THE THIRD  
SHORTCOMING CONSISTED OF SEAM SEPARATIONS AT THE  
BREAST POCKET AND ADJUSTABLE WAIST. IT IS  
CONCLUDED THAT THE TEST UNIFORM IS UNSUITABLE FOR USE  
IN THE HUMID TROPIC ENVIRONMENT BASED ON TROOP  
ACCEPTANCE. NO DEFINITE CONCLUSIONS WERE  
FORMULATED CONCERNING COMFORT AND DURABILITY DUE TO  
THE WIDE LATITUDE OF PARTICIPANT RESPONSE, LACK OF  
CONTROL UNIFORM, AND STATISTICALLY SMALL SAMPLE SIZE.  
IT IS RECOMMENDED THAT THE TEST ITEM NOT BE ADOPTED (U)

218

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-862 006 6/17  
ARMY ELECTRONIC PROVING GROUND FORT HUACHUCA AR12

ENGINEERING TEST OF PROTECTIVE HELMET SPH-4.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL-SEP 69.  
OCT 69 66P MARTINEZ, VICTOR S. I  
REPT. NO. USAEPG-FR-525  
PROJ: USATECOM-4-EI-820-PH4-001

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELMETS, PERFORMANCE(ENGINEERING)),  
(\*HEADGEAR, FLIGHT CLOTHING), PROTECTION, EFFECTIVENESS,  
ENVIRONMENTAL TESTS, FUNGI, FAILURE, HUMIDITY,  
TABLES(DATA), EARPHONES, SENSITIVITY, HEATING,  
AGING(MATERIALS), MICROPHONES, ACOUSTIC IMPEDANCE,  
RELIABILITY, MAINTAINABILITY, ACOUSTIC INSULATION, SHOCK  
RESISTANCE, IMPACT SHOCK, SAFETY, ADHESIVES (U)  
IDENTIFIERS: SPH-4 HELMETS (U)

THE U. S. ARMY ELECTRONIC PROVING  
GROUND (USAEPG), FORT HUACHUCA, ARIZONA,  
CONDUCTED AN ENGINEERING TEST OF PROTECTIVE  
HELMET SPH-4 TO DETERMINE ITS TECHNICAL  
PERFORMANCE, ENGINEERING ADEQUACY, AND SAFETY  
CHARACTERISTICS. THIRTEEN TEST ITEMS WERE BENCH  
TESTED AT USAEPG FROM JULY THROUGH SEPTEMBER  
1969. WHITE SANDS MISSILE RANGE PROVIDED  
SUPPORT AND FACILITIES FOR THE TEMPERATURE-SHOCK,  
FUNGUS, AND HUMIDITY SUBTESTS; THE REMAINING  
ENVIRONMENTAL SUBTESTS WERE CONDUCTED AT FORT  
HUACHUCA. ONE DEFICIENCY (FUNGUS) AND FIVE  
SHORTCOMINGS WERE FOUND DURING THE ENGINEERING TEST  
PROGRAM. THESE FAILURES DID NOT AFFECT THE  
OPERATIONAL PERFORMANCE OF THE SPH-4. IT IS  
CONCLUDED THAT THE TECHNICAL PERFORMANCE, ENGINEERING  
ADEQUACY, AND SAFETY CHARACTERISTICS OF THE SPH-4  
ARE SATISFACTORY. THE MASSIVE FUNGAL GROWTH FOUND  
ON THE SPH-4 COMPONENTS RESTRICTS ITS USE IN  
TROPICAL AREAS. IT IS RECOMMENDED THAT THE  
DEFICIENCY AND SHORTCOMINGS BE CORRECTED AND THE  
SPH-4 BE CONSIDERED SUITABLE FOR SERVICE TESTING.  
(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-843 709 15/7 13/10+1 6/17 6/6  
STANFORD RESEARCH INST MENLO PARK CALIF NAVAL WARFARE  
RESEARCH CENTER

NAVAL APPLICATIONS OF MAN-IN-THE-SEA  
CONCEPTS - MISSION DEFINITION.

(U)

DESCRIPTIVE NOTE: RESEARCH MEMO.,  
DEC 68 159P BIEN, ALBERT MCDONOUGH,  
PETER J. ;  
REPT. NO. NWRC-RM-50  
CONTRACT: N00014-68-A-0243-0002  
PROJ: RF-018-02-06, NR-274-008

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ADDENDUM DATED DEC 68,  
AD-506 461L.

DESCRIPTORS: (\*NAVAL OPERATIONS, UNDERWATER),  
(\*UNDERWATER VEHICLES, HUMANS), (\*UNDERWATER CLOTHING,  
PERFORMANCE(HUMAN)), MILITARY REQUIREMENTS, PRESSURE,  
SCUBA DIVERS, SWIMMING, DEEP SUBMERGENCE, SALVAGE,  
RECOVERY, MARINE ENGINEERING, DIVING, NAVAL PERSONNEL,  
PERFORMANCE(ENGINEERING), CONTINENTAL SHELVES, PRESSURE  
VESSELS, LIFE SUPPORT, HYDROSTATIC PRESSURE (U)  
IDENTIFIERS: DIVERS, \*MAN IN THE SEA PROJECT, SEALAB  
CLASS VESSELS, SWIMMERS (U)

NAVAL UNDERSEA MISSIONS AND OPERATIONS IN THE 1975-  
1985 TIME FRAME THAT REQUIRE THE USE OF MAN-IN-  
THE-SEA CONCEPTS ARE DELINEATED. THE MAN-  
IN-THE-SEA CONCEPT IS BROADLY DEFINED IN THIS  
STUDY TO INCLUDE ALL UNDERSEA SYSTEMS REQUIRING MAN'S  
EXPOSURE TO THE AMBIENT OCEAN PRESSURE. MAN-IN-  
THE-SEA MISSIONS AND OPERATIONS WITHIN THE  
OVERALL SPECTRUM OF NAVAL UNDERSEA MISSIONS AND  
OPERATIONS ARE ISOLATED ON THE BASIS OF COMPARISONS  
OF FUNCTIONAL PERFORMANCE CAPABILITIES OF ALTERNATIVE  
SYSTEMS. THE FUNCTIONAL REQUIREMENTS RELATED TO  
THE NAVAL UNDERSEA MISSIONS AND OPERATIONS, TOGETHER  
WITH THE ISOLATED MAN-IN-THE-SEA MISSIONS AND  
OPERATIONS, ARE INITIAL RESULTS OF A CONTINUING STUDY  
OF NAVAL APPLICATIONS OF MAN-IN-THE-SEA  
CONCEPTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-872 758 6/17 13/10 13/12  
BIOTECHNOLOGY INC FALLS CHURCH VA

INVESTIGATION AND RECOMMENDATIONS CONCERNING  
PROTECTIVE CLOTHING AND EQUIPMENT FOR NAVY  
PERSONNEL ON FLIGHT AND HANGAR DECKS OF  
AIRCRAFT CARRIERS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 70 235P SANDERS, JAMES H. , JR.;  
PARKER, JAMES F. , JR;  
CONTRACT: N00014-70-C-0051  
PROJ: NR-145-259

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, AIRCRAFT CARRIERS),  
FLIGHT DECKS, HANGARS, EAR PROTECTORS, FIRE PROTECTIVE  
CLOTHING, SHOES, LIFE PRESERVERS, UNDERWEAR, THERMAL  
INSULATION, HEADGEAR, GLOVES, EYEGASSES, ENVIRONMENT,  
STORAGE, LAUNDRY OPERATIONS, MAINTENANCE, NAVAL  
PERSONNEL, SAFETY, SHIP FIRES, HAZARDS,  
SURVIVAL (PERSONNEL), VULNERABILITY, CASUALTIES, WOUNDS  
AND INJURIES, COSTS, AIRCRAFT NOISE, QUESTIONNAIRES (U)  
IDENTIFIERS: THERMAL UNDERWEAR (U)

THIS STUDY DETERMINED THE REQUIREMENT FOR AND  
PRESENTED RECOMMENDATIONS CONCERNING USE OF  
PROTECTIVE CLOTHING AND EQUIPMENT BY PERSONNEL  
WORKING ON THE FLIGHT AND HANGAR DECKS OF AIRCRAFT  
CARRIERS. A REVIEW OF THE LITERATURE AND A COMPUTER  
ANALYSIS OF 3560 INJURY REPORTS, DEFINED THE NATURE  
AND EXTENT OF THE HAZARDS FOR EACH WORK STATION.  
SHIPBOARD VISITS AND STRUCTURED QUESTIONNAIRES  
PROVIDED INFORMATION REGARDING CARRIER OPERATIONS AND  
USE OF AVAILABLE PROTECTIVE EQUIPMENT. CURRENT  
EQUIPMENT WAS EXAMINED WITH RESPECT TO ADEQUACY,  
AVAILABILITY, AND COST. SPECIFIC PROTECTION  
REQUIREMENTS WERE IDENTIFIED FOR EACH PART OF THE  
BODY. ON THE BASIS OF THESE, RECOMMENDATIONS ARE  
MADE FOR AN INTEGRATED PROTECTIVE SYSTEM SUITED TO  
THE NEEDS OF FLIGHT AND HANGAR DECK PERSONNEL,  
INCLUDING SUCH ITEMS AS COVERALLS, LIFEVESTS, THERMAL  
UNDERGARMENTS, HEADGEAR, GLOVES, AND BOOTS. SOME OF  
THE ISSUES INVOLVED IN IMPLEMENTING THESE DESIGN  
RECOMMENDATIONS ALSO ARE DISCUSSED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-873 485 15/5 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

COMBAT UNIFORMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

JUL 70 11P  
REPT. NO. MTP-10-3-021  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, TEST METHODS),  
SAFETY, ACCEPTABILITY, HUMAN FACTORS ENGINEERING, VALUE  
ENGINEERING, ENVIRONMENTAL TESTS (U)  
IDENTIFIERS: \*COMBAT UNIFORMS, COMMODITY SERVICE TEST  
PROCEDURE (U)

THE ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
CHARACTERISTICS OF COMBAT UNIFORMS, AND FOR  
DETERMINING THEIR SUITABILITY FOR SERVICE USE BY THE  
U. S. ARMY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-876 647 15/2 6/17  
GRACE (W R) AND CO CLARKSVILLE MD RESEARCH DIV

RESEARCH AND FEASIBILITY STUDIES ON CLOTHING  
AND DECONTAMINATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 64-NOV 69,  
SFP 70 81P BRAUDE, G. L. I  
REPT. NO. RES-70-41  
CONTRACT: DA-18-035-AMC-287(A)  
PROJ: DA-1-B-662706-A-095

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CHEMICAL WARFARE AGENTS,  
\*DECONTAMINATION), (\*GASPROOF CLOTHING, SURFACE  
PROPERTIES), SALTS, PHENOLS, ION EXCHANGE RESINS,  
TEXTILES, ADSORPTION, LIQUIDS, COMPLEX COMPOUNDS,  
VAPORS, NERVE AGENTS, GB AGENT, VX AGENT, MUSTARD  
AGENTS, PENETRATION, GAS CHROMATOGRAPHY, PERSPIRATION,  
UREA, IMPREGNATION  
IDENTIFIERS: GF AGENT, SURFACE CHEMISTRY

(U)  
(U)

STUDIES ON DECONTAMINATION AND ON PERCUTANEOUS  
PROTECTION AGAINST CHEMICAL AGENTS WERE CONDUCTED.  
NEW OR IMPROVED CHEMICAL AGENT DECONTAMINANTS WERE  
INVESTIGATED, WITH SELECTED METAL SALTS AND  
COMPOUNDS, PHENOLS, AND PLASTICIZED ION EXCHANGE  
RESINS SHOWING THE MOST PROMISE. ATTEMPTS TO  
CATALYTICALLY DECONTAMINATE AGENTS BY FREE RADICAL  
INITIATED OXIDATION WERE NOT SUCCESSFUL. SILICONES  
AND SILAZANES WERE ALSO NOT EFFECTIVE. THEORETICAL  
AND EXPERIMENTAL VARIABLES WERE CORRELATED FOR  
PREDICTING THE PERFORMANCE OF FABRIC IMPREGNANTS AS  
VAPOR BARRIERS. THE INTERACTION BETWEEN FABRICS OR  
SOLID SORBENT AND LIQUID CHEMICAL AGENTS WERE  
DEFINED. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-876 932 6/17  
WELSON AND CO INC HARTFORD CONN

ROCKET PROPELLANT HANDLER'S SUIT.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. SEP 69-JUL 70,  
OCT 70 80P KORABOWSKI, JOHN J. I  
CONTRACT: F04611-69-C-0102  
PROJ: AF-3058  
MONITOR: AFRPL TR-70-135

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE CLOTHING, DESIGN), (\*ROCKET  
PROPELLANTS, HANDLING), WEIGHT, MOBILITY, GLOVES,  
LEAKAGE(FLUID), HELMETS, SAFETY BELTS, VALVES, DROP  
TESTS, MAINTAINABILITY, HALOCARBON PLASTICS (U)  
IDENTIFIERS: ROCKET PROPELLANT HANDLER SUITS,  
TETRAFLUOROETHYLENE RESINS (U)

THE REPORT COVERS THE DESIGN, DEVELOPMENT,  
FABRICATION AND TESTING OF ONE ROCKET PROPELLANT  
HANDLER'S SUIT. THE SUIT ON COMPLETION OF  
FABRICATION WAS DELIVERED TO THE AIR FORCE  
ROCKET PROPULSION LABORATORY FOR FUEL TESTS.  
PRESENTED IN THE DOCUMENT ARE THE DESCRIPTION OF  
THE SUIT, ITS OPERATION, THE TEST REQUIREMENTS,  
PROCEDURES AND DOCUMENTATION PROBLEMS, AND  
RECOMMENDATIONS. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-877 249 6/17  
AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

WINDBLAST TEST OF HIGH-ALTITUDE FLYING  
OUTFIT A/P22S-4.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 70 48P HOCHWALT, JOHN R. ;  
REPT. NO. ASD-TR-70-11  
PROJ: AF-412A

UNCLASSIFIED REPORT

DESCRIPTORS: (•FLIGHT CLOTHING,  
PERFORMANCE(ENGINEERING)), (•WIND, FLIGHT CLOTHING),  
FLIGHT TESTING, HIGH ALTITUDE, TAPES, SIMULATION,  
EJECTION

(U)

AN INVESTIGATION WAS UNDERTAKEN TO DETERMINE THE  
EFFECT OF WINDBLAST ON THE A/P22S-4 HIGH  
ALTITUDE FLYING OUTFIT DURING SIMULATED PILOT  
EJECTION AT A MAXIMUM SEA-LEVEL FLIGHT MACH NUMBER  
OF 0.91 (600 KNOTS). TWO A/P22S-4  
OUTFITS WERE TESTED. THE INTEGRITY OF BOTH  
OUTFITS WAS SATISFACTORILY DEMONSTRATED, ALTHOUGH  
SLIGHT DAMAGE RESULTED. THE TEST FURTHER  
DEMONSTRATED THAT VELCRO TAPE IS A SATISFACTORY  
SUBSTITUTE FOR THE LACING CORD CURRENTLY USED FOR  
FASTENING THE EXTERIOR COVER AND RESTRAINT LAYER AT  
THE VENTILATION PORT, ALTIMETER, AND CONTROLLER  
LOCATIONS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-880 047 11/5 6/17  
AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

NONFLAMMABLE PBI FABRICS FOR PROTOTYPE AIR  
FORCE FLIGHT SUITS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. AUG 69-MAR 70;  
NOV 70 39P SCHULMAN, STANLEY INSTANTON,  
ROBERT M. I  
REPT. NO. AFML-TR-70-178  
PROJ: AF-7320  
TASK: 732002

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE RESISTANT TEXTILES, \*FLIGHT  
CLOTHING), (\*HEAT RESISTANT PLASTICS, SYNTHETIC FIBERS),  
FIRE PROTECTIVE CLOTHING, AIRCRAFT FIRES, FLAMMABILITY,  
TEST METHODS, COTTON TEXTILES, NYLON, BENZIMIDAZOLES,  
POLYMERS (U)  
IDENTIFIERS: \*BENZIMIDAZOLE POLYMERS, NOMEX POLYMERS,  
POLYIMIDE RESINS (U)

CANDIDATE FLIGHT SUIT FABRICS HAVE BEEN EVALUATED  
ALONG WITH CURRENT AIR FORCE ISSUE FLIGHT SUIT  
FABRICS FOR PERSONNEL PROTECTION IN SIMULATED  
AIRCRAFT ACCIDENT FIRES. MANNEQUINS CLOTHED IN THE  
VARIOUS COVERALL FABRICS WERE EXAMINED FOR AVERAGE  
PERCENT BODY AREA BURNED WHERE SECOND DEGREE OR WORSE  
BURNS OCCURRED. USE OF COTTON AND FIRE RETARDANT  
TREATED COTTON FLIGHT SUITS RESULTED IN AN AVERAGE OF  
GREATER THAN 60 PERCENT BODY AREA BURNED. NOMEX  
COVERALLS RESULTED IN GREATER THAN 30 PERCENT AVERAGE  
BODY AREA BURNED. POLYBENZIMIDAZOLE (PBI)  
RESULTED ON THE AVERAGE, LESS THAN TEN PERCENT BODY  
AREA BEING BURNED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZON08

AD-884 560 6/11  
NAVAL SHIP RESEARCH AND DEVELOPMENT LAB PANAMA CITY  
FLA

EVALUATION CRITERIA FOR HEATED DIVER SUIT  
SYSTEMS.

(U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT REPT.,  
APR 71 33P AUSTIN, GEORGE B. IPAYNE,  
ROBERT H. I  
REPT. NO. NSRDL/PC-3458  
PROJ: WR-1-5126-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SCUBA DIVERS, PROTECTIVE CLOTHING),  
(\*PROTECTIVE CLOTHING, HEATING), THERMAL INSULATION,  
SAFETY, CONTROL SYSTEMS, TESTS, HUMAN FACTORS  
ENGINEERING, LIFE SUPPORT

(U)

IDENTIFIERS: \*DIVING SUITS, EVALUATION, HEATED DIVING  
SUITS

(U)

THE CRITERIA FOR EVALUATING HEATED SUITS FOR DIVERS  
ARE DESCRIBED. THE MOST STRINGENT REQUIREMENT IS  
THE ESTABLISHMENT OF CRITERIA FOR TESTING SELF-  
CONTAINED HEATED SUIT SYSTEMS TO PROTECT A DIVER  
THERMALLY IN 28 DEG F WATER TO 1000-FOOT DEPTHS  
FOR DURATIONS OF 6 HOURS. SYSTEMS UTILIZING REMOTE  
HEAT SOURCES VIA AN UMBILICAL CORD TRANSFER SYSTEM  
ARE INCLUDED AND REQUIREMENTS FOR THREE CATEGORIES OF  
TESTING CRITERIA ARE DESCRIBED: (1)  
PREOPERATIONAL TESTS, (2) OPERATIONAL TESTS  
(MAN SIMULATED), AND (3) OPERATIONAL TESTS  
(MANNED). THE DOMINANT EVALUATION CRITERION  
REQUIREMENT FOR ALL TESTS IS SAFETY AND STRESS IS  
PLACED ON THE REQUIREMENT FOR BACKUP CONTROLS AND  
FAIL-SAFE COMPONENTS FOR ALL SYSTEMS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-885 304 6/17  
AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

THE DESIGN REQUIREMENTS, DESCRIPTION AND  
FUNCTIONAL OPERATION OF THE A/P22S-4 AND  
A/P22S-6 HIGH ALTITUDE, FLYING  
OUTFITS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 71 102P GILLESPIE, KENT W. HOCHWALT.  
JOHN R. I  
REPT. NO. ASD-TR-70-58  
PROJ: AF-412A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, DESIGN), FLIGHT CLOTHING,  
HELMETS, GLOVES, PRESSURIZATION, VENTILATION,  
MICROPHONES, HIGH ALTITUDE, QUESTIONNAIRES (U)  
IDENTIFIERS: A/P22S-4 PRESSURE SUITS, A/P22S-6  
PRESSURE SUITS (U)

IN THIS REPORT THE DESIGN REQUIREMENTS, DESCRIPTION  
AND FUNCTIONAL OPERATION OF THE A/P22S-4 AND  
A/P22S-6 OUTFITS ARE PRESENTED. THE BASELINE  
MODEL WAS THE IMPROVED A/P22S-2 HIGH  
ALTITUDE, FULL PRESSURE, FLYING OUTFIT.  
PERTINENT ASPECTS OF THE PROGRAM ARE PRESENTED.  
IN ADDITION, PRODUCTION OF AN IMPROVED OUTFIT,  
IDENTIFIED AS A/P22S-6A, IS DISCUSSED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-885 575 6/17 15/5  
AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

THERMAL PROTECTION CAPACITY OF THE A/  
P22S-4 HIGH ALTITUDE FLYING OUTFIT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 71 38P HOCHWALT, JOHN R. ;  
REPT. NO. ASD-TR-71-3  
PROJ: AF-412A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, THERMAL INSULATION),  
(\*AVIATION SAFETY, \*FIRE PROTECTIVE CLOTHING), FIRES,  
JET ENGINE FUELS, TESTS, ARMY RESEARCH  
IDENTIFIERS: JP-4 FUEL

(U)  
(U)

THE REPORT DESCRIBES AND ILLUSTRATES THE THERMAL  
PROTECTION PROVIDED BY THE A/P22S-4 HIGH  
ALTITUDE FLYING OUTFIT. IT INDICATED THAT AN  
INDIVIDUAL SUBJECTED TO A JP-4 FUEL FIRE WITH  
TEMPERATURES FROM 1800 TO 2300 DEGREES FAHRENHEIT,  
FOR A PERIOD OF THREE SECONDS, WOULD NOT HAVE BEEN  
BURNED IF HE WERE WEARING THIS OUTFIT.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-886 642 6/11  
AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

DESIGN AND DEVELOPMENT OF A HIGH ALTITUDE  
PROTECTIVE ASSEMBLY.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 71 41P GILLESPIE, KENT W. I  
REPT. NO. ASD-TR-71-8

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PRESSURE SUITS, FLIGHT CREWS), HIGH  
ALTITUDE, LIFE SUPPORT, BAROMETRIC PRESSURE, HELMETS,  
DIAPHRAGMS(MECHANICS), EXPANDABLE STRUCTURES,  
VENTILATION, OXYGEN MASKS, PROTECTION, RESPIRATION, HEAT  
TRANSFER, NYLON, OXYGEN EQUIPMENT, PARACHUTES,  
INFLATABLE STRUCTURES, LIFE PRESERVERS, EXPOSURE  
SUITS

(U)

IDENTIFIERS: CWU-3/P ANTIGRAVITY SUITS, CWU-12/P  
ANTIEXPOSURE SUITS, HAPA(HIGH ALTITUDE PROTECTIVE  
ASSEMBLIES), \*HIGH ALTITUDE PROTECTIVE ASSEMBLIES,  
LPU-3/P LIFE PRESERVERS, MA-3 VENTILATION GARMENTS,  
PARACHUTE HARNESSSES, PARTIAL PRESSURE SUITS

(U)

THIS REPORT PRESENTS EXCERPTS FROM A DESIGN STUDY  
REPORT AND INFORMATION REGARDING THE REQUIREMENT FOR  
AND THE DEVELOPMENT AND FABRICATION OF A HIGH  
ALTITUDE PROTECTIVE ASSEMBLY.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-886 843 6/17  
NAVAL SHIP RESEARCH AND DEVELOPMENT LAB PANAMA CITY  
FLA

EVALUATION OF SWIMMER EXPOSURE SUITS IN  
SURFREEZING WATERS.

(U)

JUL 71 34P JENKINS, WALLACE T. I  
REPT. NO. NSRDL/PC-3471  
PROJ: 54619  
TASK: 11897-10

UNCLASSIFIED REPORT

DESCRIPTORS: (EXPOSURE SUITS, UNDERWATER), POLAR  
REGIONS, TEMPERATURE, SYNTHETIC RUBBER, PROTECTION,  
GLOVES, ACCEPTABILITY, NAVAL RESEARCH, DIVING  
IDENTIFIERS: SWIMMER EXPOSURE SUITS

(U)

(U)

THREE TYPES OF EXPOSURE SUITS FOR UNDERWATER  
SWIMMERS WERE EVALUATED IN THE ARCTIC OCEAN AT  
WATER TEMPERATURES BETWEEN 28.9F AND 30.6F: A 3/  
8-INCH THICK, CLOSED CELL NEOPRENE, STANDARD WET  
SUIT; A 1/4-INCH THICK, CLOSED CELL NEOPRENE DRY SUIT  
WORN OVER FULL NYLON FUR UNDERWEAR; AND A 3/8-INCH  
THICK WET SUIT FABRICATED OF NONCOMPRESSIBLE  
MATERIAL. FOUR DIVER-OCEANOGRAPHERS USED AND  
EVALUATED THE SUITS IN SUBFREEZING WATER BENEATH THE  
ICE. IT WAS CONCLUDED AFTER A SERIES OF 40 DIVES,  
RANGING IN DURATION FROM 37 TO 115 MINUTES, THAT THE  
DRY SUIT AFFORDS MORE PROTECTION AND IS MORE  
SATISFACTORY THAN EITHER WET SUIT. THE WET SUIT OF  
NONCOMPRESSIBLE MATERIAL PROVIDES MORE PROTECTION AT  
DEPTH THAN THE STANDARD WET SUIT. NONE OF THE  
GLOVES OR MITTENS, OR ANY COMBINATION, AFFORDED  
ADEQUATE PROTECTION FOR THE HANDS. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-892 055 6/17  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

CANADIAN SELF-CONTAINED DIVING EQUIPMENT  
PERFORMANCE TESTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAR 53 25P THOMPSON, E. D. IKINCAID, C.  
T. IDWYER, J. V. I  
REPT. NO. NEDU-FORMAL-1-53

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING,  
PERFORMANCE(ENGINEERING)), DIVING, UNDERWATER  
EQUIPMENT, BREATHING APPARATUS, DESIGN,  
INSTRUMENTATION, CANADA  
IDENTIFIERS: MINE RECOVERY SUITS

(U)  
(U)

THE EXPERIMENT EVALUATES THE PERFORMANCE OF A  
MODIFIED MINE RECOVERY SUIT UNDER VARIOUS  
WORKING CONDITIONS TO A DEPTH OF 99 FEET. THE  
OUTFIT CONSISTED OF A HUNCHBACK CANVAS LIGHTWEIGHT  
DIVING DRESS WITH AN INTEGRATED FACEMASK HAVING A  
HINGED FACEPLATE. A MINE RECOVERY SUIT  
(MRS) BREATHING APPARATUS SUPPLIED BREATHING MEDIUM  
TO THE FACEMASK BY MEANS OF A VENTURI JET WHICH  
METERED THE SUPPLY AND PROVIDED RECIRCULATION OF THE  
BREATHING MEDIUM THROUGH A CARBON DIOXIDE ABSORBENT.  
A NECK YOKE BREATHING BAG PROVIDED A RESERVOIR FOR  
HIGH BREATHING RATE DEMANDS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-893 971 6/17 6/11  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

SECOND SERIES U.S. RUBBER COMPANY  
LIGHTWEIGHT DIVING OUTFITS WITH AIRLINE AND  
DEMAND SUPPLY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 53 17P WOLFE, T. R. , IIIIDWYER,  
J. V. ;  
REPT. NO. NEDU-8-52  
PROJ: NS-185-005

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER CLOTHING, DIVING), (\*BREATHING  
MASKS, UNDERWATER CLOTHING), DESIGN, NYLON, RUBBER  
COATINGS, FASTENINGS, SHOES, TEXTILES, LEAKAGE (FLUID),  
MOISTUREPROOFING, SHALLOW WATER, UNDERWATER EQUIPMENT,  
UNDERWATER COMMUNICATION SYSTEMS, UNDERWATER TELEPHONES,  
HAZARDS, ELECTRICITY (U)  
IDENTIFIERS: CANVAS, ELECTRIC SHOCK (U)

THIS EVALUATION CONCERNS THE SUITABILITY OF THE  
COMPONENTS OF THREE EXPERIMENTAL LIGHTWEIGHT DIVING  
DRESSES AS DETERMINED BY A SERIES OF DIVING RUNS.  
IN GENERAL, THE DRESSES AND THEIR INTEGRATED  
FACEMASKS ARE SATISFACTORY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-922 273 6/17 5/5 11/9  
TACTICAL AIR WARFARE CENTER EGLIN AFB FLA

FOAMED-IN-PLACE HELMET.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 15 SEP 70-28 APR 72,  
JUL 72 63P BALENTINE, DOYLE E. I  
MONITOR: TAC TEST-70A-057F

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELMETS, \*EXPANDED PLASTICS), MOLDINGS,  
ISOCYANATE PLASTICS, VISIBILITY, EJECTION,  
RETENTION(PSYCHOLOGY), NOISE, EAR PROTECTORS,  
INSTRUCTION MANUALS, MANUFACTURING, AGING(MATERIALS),  
CATALYSTS, HUMIDITY, TEMPERATURE, ASSEMBLY, DRYING,  
FLIGHT CREWS, MOLDING MATERIALS, LEATHER, ADHESIVES,  
HUMAN FACTORS ENGINEERING, MODEL TESTS, PILOTS, TACTICAL  
AIR COMMAND, ACCEPTABILITY, TECHNICIANS, QUESTIONNAIRES,  
ANTHROPOMETRY (U)

IDENTIFIERS: FLIGHT CLOTHING, HELMETS, FOAMED IN PLACE  
HELMETS, \*HELMET LINERS, HGU-2A/P HELMETS,  
SIZES(DIMENSIONS) (U)

THE FOAMED-IN-PLACE HELMET PROCESS EVALUATED  
IN THIS OT AND E WAS AN ATTEMPT TO CORRECT THE  
DEFICIENCIES THAT EXISTED IN THE FORMER HELMET.  
LIFE SUPPORT TECHNICIANS ARE CAPABLE, WITH  
PRACTICE, OF LOCAL FABRICATION OF ACCEPTABLE  
FOAMED-IN-PLACE HELMETS. MOST OF THE MATERIAL  
AND EQUIPMENT PROVIDED WERE SATISFACTORY; HOWEVER,  
SOME WERE UNACCEPTABLE AND CONSIDERABLE SUPPLIES WERE  
REQUIRED THAT WERE NOT PROVIDED. INSTRUCTIONS FOR  
THE HELMET LINER FOAMING PROCESS, ISSUED BY  
AERONAUTICAL SYSTEMS DIVISION, WERE FOUND TO BE  
ADEQUATE. THE INSTRUCTIONS SHOULD BE REFINED AND  
PHOTOGRAPHS AND ILLUSTRATIONS SHOULD BE ADDED.  
INSTRUCTIONS FOR THE HELMET FABRICATION WERE  
INADEQUATE. PARTICIPATING AIRCREWS RATED THE TEST  
HELMET SUPERIOR TO THE PREVIOUSLY USED HELMETS IN THE  
AREAS OF COMFORT (82 PERCENT) AND STABILITY (80  
PERCENT). NO SIGNIFICANT DIFFERENCE WAS NOTED IN  
RESTRICTIONS TO VISIBILITY. NOISE ATTENUATION WAS  
RATED ACCEPTABLE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMOB

AD-909 926 6/17  
NAVY EXPERIMENTAL DIVING UNIT WASHINGTON D C

EVALUATION OF LIGHTWEIGHT DEEP SEA DIVING  
DRESS.

(U)

DESCRIPTIVE NOTE: SUMMARY REPT.,  
APR 71 9P CHANDLER, DONALD R. IREIMERS,  
STEPHEN D. I  
REPT. NO. NEDU-LR-1-71

UNCLASSIFIED REPORT  
AVAILABILITY: MICROFICHE COPIES ONLY.

DESCRIPTORS: (•UNDERWATER CLOTHING, SCUBA DIVERS),  
WEIGHT, HELMETS, DEEP SUBMERGENCE, SALVAGE, DIVING,  
FLEXIBLE STRUCTURES, MANEUVERABILITY,  
FATIGUE (PHYSIOLOGY), SEALS, GLOVES, MAINTENANCE,  
TEXTILES, ACCEPTABILITY, NAVAL PERSONNEL, JAPAN  
IDENTIFIERS: •DIVING SUITS, JAPANESE EQUIPMENT

(U)  
(U)

COMMERCIAL DEEP SEA DIVERS IN JAPAN AND ON THE  
U.S. WEST COAST USE A DEEP SEA DRESS MADE OF  
A LIGHTER WEIGHT, MORE FLEXIBLE MATERIAL THAN THE  
STANDARD USN DEEP SEA DRESS. THREE OF THE LIGHT  
WEIGHT DRESSES WERE TESTED AT NAVY EXPERIMENTAL  
DIVING UNIT AND NAVAL SCHOOL, DIVING AND  
SALVAGE OVER A PERIOD OF 6 MONTHS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM08

AD-914 019 15/5 11/5  
FABRIC RESEARCH LABS INC DEDHAM MASS

DEVELOPMENT OF PBI FABRIC FOR FLIGHT SUIT  
WEAR TEST.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. SEP 68-SEP 70,  
SEP 71 79P COSKREN, ROBERT J. IKASWELL,  
ERNEST R. I  
CONTRACT: F33657-69-C-0256  
PROJ: AF-412A  
MONITOR: AFML TR-71-195

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CLOTHING, BENZIMIDAZOLES),  
(\*BENZIMIDAZOLES, \*FIRE RESISTANT TEXTILES), POLYMERS,  
TEST METHODS, FLAMMABILITY, WEAR RESISTANCE, HEAT  
TRANSFER, THERMAL STABILITY, AIRCRAFT FIRES, SHRINKAGE,  
SIMULATION (U)  
IDENTIFIERS: \*POLYBENZIMIDAZOLE (U)

THE OBJECTIVE OF THIS PROGRAM WAS THE DEVELOPMENT  
OF PBI FABRIC FOR EVALUATION IN SUMMER WEIGHT  
FLYING COVERALLS. THE WORK WAS CARRIED OUT IN TWO  
PHASES. DURING PHASE I A GROUP OF SPUN PBI  
FABRICS WAS DESIGNED, WOVEN, EVALUATED IN THE  
LABORATORY AND TWENTY COVERALLS FABRICATED FOR  
EVALUATION BY AFML. IN PHASE II 600 PBI  
COVERALLS WERE FABRICATED AND DISTRIBUTED TO VARIOUS  
AIR FORCE, ARMY, NAVY, AND NASA  
INSTALLATIONS FOR IN-SERVICE O.T. AND E.  
(OPERATIONAL TEST AND EVALUATION). A  
LABORATORY PROCESS WAS DEVELOPED TO MINIMIZE THE  
THERMAL SHRINKAGE OF SPUN PBI FABRIC RESULTING FROM  
HIGH TEMPERATURE EXPOSURE. FURTHER DEVELOPMENT MUST  
BE CONDUCTED TO REFINE AND OPTIMIZE THE PROCESS TO  
PREVENT DARKENING OF THE FABRIC. THE PBI FABRIC  
ULTIMATELY CHOSEN FOR THE 600 COVERALLS WAS WOVEN  
FROM 21'S SINGLES (COTTON COUNT) 3.6 TWIST  
MULTIPLIER YARN. THE FABRIC SELECTED WAS A 69X64,  
2X1 TWILL WEIGHING 4.7 OUNCES PER SQUARE YARD. THE  
COVERALLS WERE SINGLE LAYERED THROUGHOUT, EXCEPT IN  
AREAS CONTAINING POCKETS. BASED ON FLAMMABILITY  
TESTS CONDUCTED IN THE LABORATORY AND IN SIMULATED  
AIRCRAFT FUEL FIRES, THIS PBI FABRIC WAS FOUND TO  
BE SUPERIOR TO THE FLYING SUITS CURRENTLY USED BY THE  
AIR FORCE IN PREVENTING DANGEROUS THERMAL  
PENETRATION AND DESTRUCTION BY FIRE. (U)

UNCLASSIFIED

CORPORATE AUTHOR - MONITORING AGENCY

•ACUREX COMP MOUNTAIN VIEW CALIF  
AEROTHERM DIV

• • •  
ANALYSIS OF THE THERMAL  
RESPONSE OF PROTECTIVE FABRICS.  
(AFML-TR-73-17)  
AD-759 525

•AERONAUTICAL SYSTEMS DIV WRIGHT-  
PATTERSON AFB OHIO

• • •  
ASD-TDR63 729  
INTEGRATED BACK-PACK  
MANEUVERING UNIT PROPULSION STUDY  
AND EXHAUST PLUME HEATING ANALYSIS.  
AD-609 206

• • •  
ASD-TR-70-11  
WINDBLAST TEST OF HIGH-ALTITUDE  
FLYING OUTFIT A/P225-4.  
AD-877 249

• • •  
ASD-TR-70-58  
THE DESIGN REQUIREMENTS,  
DESCRIPTION AND FUNCTIONAL  
OPERATION OF THE A/P225-4 AND  
A/P225-6 HIGH ALTITUDE, FLYING  
OUTFITS.  
AD-885 304

• • •  
ASD-TR-71-3  
THERMAL PROTECTION CAPACITY OF  
THE A/P225-4 HIGH ALTITUDE FLYING  
OUTFIT.  
AD-885 575

• • •  
ASD-TR-71-8  
DESIGN AND DEVELOPMENT OF A  
HIGH ALTITUDE PROTECTIVE ASSEMBLY.  
AD-885 641

• • •  
ASD-TR-71-147  
EVALUATION OF THERMALLY  
STABLE POLYMER FABRICS FOR USE IN  
SPACE SUITS.

• • •  
AERONAUTICAL SYSTEMS DIV WRIGHT-  
PATTERSON AFB OHIO

• • •  
ASD-TR-71-147  
EVALUATION OF THERMALLY  
STABLE POLYMER FABRICS FOR USE IN  
SPACE SUITS.

CONCEPTUAL DESIGN FOR A PERSONAL  
THERMAL CONDITIONING SYSTEM.  
AD-670 212

•AEROSPACE MEDICAL RESEARCH LAB WRIGHT-  
PATTERSON AFB OHIO

• • •  
AMRL-66-173  
SENSIBLE HEAT TRANSFER IN THE  
GEMINI AND APOLLO PRESSURE SUITS.  
AD-647 828

• • •  
AMRL-TDR-64-37  
EXPERIMENTAL SPACE WORKER'S  
GARMENT AND HELMET ASSEMBLY.  
AD-738 088

• • •  
AMRL-TDR64 60  
EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.  
AD-608 088

• • •  
AMRL-TDR64 66  
HEIGHT-WEIGHT SIZING OF  
PROTECTIVE GARMENTS, BASED ON  
JAPANESE AIR SELF-DEFENSE FORCE  
PILOT DATA, WITH FIT-TEST RESULTS.  
AD-606 039

• • •  
AMRL-TR-64-110  
MOMENTS OF INERTIA AND CENTERS  
OF GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 863

• • •  
AMRL-TR64 118  
THE USE OF LINES OF  
NONEXTENSION TO IMPROVE MOBILITY IN  
FULL-PRESSURE SUITS.  
AD-610 519

• • •  
AMRL-TR-66-186  
STUDY AND DEVELOPMENT OF  
MATERIALS AND TECHNIQUES FOR  
PASSIVE THERMAL CONTROL OF FLEXIBLE  
EXTRAVEHICULAR SPACE GARMENTS.  
AD-624 886

• • •  
AMRL-TR-66-4  
A STUDY OF TECHNIQUES AND  
EQUIPMENT FOR THE EVALUATION OF

UND-WIN

UNCLASSIFIED

EXTRA-VEHICULAR PROTECTIVE GARMENTS.  
AD-635 206

• • •  
AMRL-TR-66-143  
RESEARCH AND DEVELOPMENT OF  
EXTRA-VEHICULAR PROTECTIVE ASSEMBLY.  
AD-647 197

• • •  
AMRL-TP-66-183  
RESEARCH ON CLOSED-CELL SPONGE  
AS A PRESSURE TECHNIQUE FOR  
PROTECTIVE ASSEMBLIES.  
AD-652 653

• • •  
AMRL-TP-66-193  
RESEARCH AND DEVELOPMENT OF  
HELMET FACEPIECES FOR SPACE  
PROTECTIVE ASSEMBLIES.  
AD-652 248

• • •  
AMRL-TR-66-260  
RESEARCH TO ADVANCE  
EXTRA-VEHICULAR PROTECTIVE  
TECHNOLOGY.  
AD-816 964

• • •  
AMRL-TR-67-59  
PRESSURE SEALING CLOSURES FOR  
FULL PRESSURE PROTECTIVE SUIT  
ASSEMBLIES.  
AD-658 204

• • •  
AMRL-TR-67-128  
TECHNIQUES AND MATERIALS FOR  
PASSIVE THERMAL CONTROL OF RIGID  
AND FLEXIBLE EXTRA-VEHICULAR SPACE  
ENCLOSURES.  
AD-666 940

• • •  
AMRL-TR-67-190  
VARIABLE THERMAL CONDUCTIVITY  
HEAT TRANSFER RESEARCH FOR PERSONAL  
PROTECTIVE ASSEMBLIES.  
AD-668 765

• • •  
AMRL-TR-67-216  
FULL PRESSURE SUIT FOR SPACE  
CREWS.  
AD-939 425

• • •  
AMRL-TR-67-236

AN AUTOMATIC ANALOG BREATHING  
SYSTEM FOR MULTICELL PRESSURE  
SUITS.

AD-687 436

• • •  
AMRL-TR-68-74  
A PORTABLE TEST BATTERY FOR  
COMPARATIVELY EVALUATING OPERATOR  
PERFORMANCE IN FULL-PRESSURE SUIT  
ASSEMBLIES.  
AD-680 825

• • •  
AMRL-TR-68-86  
METEOROID THREAT TO  
EXTRA-VEHICULAR SPACE SUIT  
ASSEMBLIES.  
AD-691 461

• • •  
AMRL-TR-68-87  
SURVEY OF THERMAL CONTROL  
TECHNIQUES FOR EXTRA-VEHICULAR SPACE  
SUITS.  
AD-687 149

• • •  
AMRL-TR-68-94  
SLIP NET MOBILITY JOINTS FOR  
PRESSURE SUITS.  
AD-848 605

• • •  
AMRL-TR-68-122  
ENGINEERING DESIGN STUDY OF A  
SPACE SUIT WITH AN INTEGRATED  
ENVIRONMENTAL CONTROL SYSTEM.  
AD-680 826

• • •  
AMRL-TR-68-187  
VORTEX TUBE AS A THERMAL  
PROTECTIVE DEVICE.  
AD-706 455

• • •  
AMRL-TR-69-6  
ANTHROPOMETRIC DIMENSIONS OF  
AIR FORCE PRESSURE-SUITED PERSONNEL  
FOR WORKSPACE AND DESIGN CRITERIA.  
AD-697 022

• • •  
AMRL-TR-69-54  
EFFICACY OF VENTILATING  
SYSTEMS.  
AD-726 076

• • •

0-2  
UNCLASSIFIED

/ZON08

UNCLASSIFIED

AER-AER

AMRL-TR-69-56  
RESEARCH AND DEVELOPMENT ON A  
PASSIVELY PRESSURIZED FLIGHT  
UNIFORM.  
AD-702 537

AMRL-TR-69-64  
EXPLORATORY DEVELOPMENT OF  
PRESSURE SUIT MOBILITY JOINTS,  
GLOVES AND HELMET.  
AD-711 676

AMRL-TR-69-112  
INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.  
AD-702 124

AMRL-TR-69-127  
ZOOM BAG SCENARIO.  
AD-697 455

AMRL-TR-69-132  
INTEGRATED MANEUVERING LIFE  
SUPPORT SYSTEM.  
AD-714 577

AMRL-TR-70-3  
ANTHROPOLOGICAL APPLICATIONS IN  
HIGH ALTITUDE FLIGHT SYSTEMS.  
AD-706 888

AMRL-TR-70-111  
EXPLORATORY DEVELOPMENT OF  
PARTIAL PRESSURE HELMET AND  
MOBILITY JOINTS FOR EMERGENCY  
PRESSURE SUIT OUTFITS.  
AD-720 275

AMRL-TR-70-120  
DESIGN AND FABRICATION OF A  
PASSIVELY PRESSURIZED SUIT.  
AD-720 827

AMRL-TR-71-80  
CENTRIFUGE VALIDATION OF A  
TACTILE 'G-LIMIT' WARNING DEVICE.  
AD-732 194

AMRL-TR-72-65  
COLD WATER EVALUATION OF

ENVIRONMENTAL MARINE DIVING SUITS.  
AD-754 278

AMRL-TR-72-66  
EVALUATION OF FIRE RETARDANT  
FABRICS.  
AD-754 935

AMRL-TR-72-77  
BACKGROUND AND DEVELOPMENT OF  
BOYLE'S LAW ALTITUDE SUITS.  
AD-761 797

AMRL-TR-73-82  
PHYSIOLOGICAL EFFECTS OF  
WEARING THE FIRE PROXIMITY SUIT ON  
CRASH TRUCK ALERT STATUS TO HOT-DRY  
AND HOT-HUMID ENVIRONMENTS.  
AD-773 828

AEROSPACE MEDICAL RESEARCH LABS  
WRIGHT-PATTERSON AFB OHIO

AMRL-TR-64 36  
X-20A FULL-PRESSURE SUIT  
QUANTITATIVE PERFORMANCE.  
AD-603 701

AMRL-TR-64 41  
FINGER DEXTERITY OF THE  
PRESSURE-SUITED SUBJECT.  
AD-603 705

AMRL-TR-64 79  
RESPIRATORY AND MICROCLIMATE  
TEMPERATURES WITHIN THE PARKA HOOD  
IN EXTREME COLD.  
AD-608 139

AMRL-TR-65-4  
EFFECTS OF VARIOUS GASES ON  
HANDGEAR INSULATION.  
AD-628 367

AMRL-TR-65-58  
EFFICACY OF PRESSURE SUIT  
COOLING SYSTEMS IN HOT  
ENVIRONMENTS.  
AD-627 190

AMRL-TR-65-65

0-3  
UNCLASSIFIED

/ZON08



AIR-AIR

UNCLASSIFIED

MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS.  
AD-676 979

• • •  
AMRL-TR-65-86  
ACOUSTICAL EVALUATION OF X-20A  
DYNA-SOAR FULL-PRESSURE SUIT  
ASSEMBLIES.  
AD-618 715

• • •  
AMRL-TR-66-147  
BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS.  
AD-626 619

• • •  
AMRL-TR-66-179  
OPERATIONAL CHARACTERISTICS OF  
THE 1964 EXTRAVEHICULAR RESEARCH  
MODEL FULL PRESSURE ASSEMBLY.  
AD-819 324

• • •  
AMRL-TR-66-235  
EVALUATION OF MANNED ORBITING  
LABORATORY DESIGN DEFINITION  
PRESSURE GARMENTS.  
AD-842 833

• • •  
AMRL-TR-67-124  
APPLICATION OF THE RANQUE-  
WILSCH VORTEX TUBE TO AIRCREW  
COOLING PROBLEMS.  
AD-673 345

• • •  
AMRL-TR-67-234  
PRINCIPLES OF THE BOYLE'S LAW  
EMERGENCY PRESSURE SUIT AND THEIR  
APPLICATION.  
AD-685 720

• • •  
AMRL-TR-68-24  
CLEARANCE AND PERFORMANCE  
VALUES FOR THE HARE-HANDED AND THE  
PRESSURE-GLOVED OPERATOR.  
AD-681 457

• • •  
AMRL-TR-68-140  
DESCRIPTION AND OPERATING  
INSTRUCTIONS FOR A 7-CHANNEL

TELEMETRY SYSTEM FOR PHYSIOLOGICAL  
TEMPERATURES AND THE  
ELECTROCARDIOGRAM.  
AD-686 067

• • •  
TR-64-126  
A COMPARISON OF THREE FULL-  
PRESSURE SUITS IN TERMS OF CONTROL  
ACTIVATION TIME.  
AD-613 597

• AIR FORCE MATERIALS LAB WRIGHT-  
PATTERSON APB OHIO

• • •  
AFML-TR-70-178  
NONFLAMMABLE PBI FABRICS FOR  
PROTOTYPE AIR FORCE FLIGHT SUITS.  
AD-880 047

• • •  
AFML-TR-71-195  
DEVELOPMENT OF PBI FABRIC FOR  
FLIGHT SUIT WEAR TEST.  
AD-914 019

• • •  
AFML-TR-72-247  
DEVELOPMENT OF REFLECTIVE  
MATERIALS FOR FIRE FIGHTER'S BOOTS.  
AD-762 544

• • •  
AFML-TR-73-17  
ANALYSIS OF THE THERMAL  
RESPONSE OF PROTECTIVE FABRICS.  
AD-759 525

• AIR FORCE OFFICE OF SCIENTIFIC  
RESEARCH ARLINGTON VA

• • •  
AFOSR-69-05747R  
A COOLING HOOD IN HOT-HUMID  
ENVIRONMENTS.  
AD-684 082

• • •  
AFOSR-69-23977R  
PROCEEDINGS OF THE SYMPOSIUM ON  
INDIVIDUAL COOLING, MARCH 17-18,  
1969,  
AD-694 130

• • •  
AFOSR-TR-71-1364  
WATER COOLED HOOD AFFECTS  
CREATIVE PRODUCTIVITY.

0-4  
UNCLASSIFIED

/ZOMOB

UNCLASSIFIED

AIR-ARM

AD-724 020

• • •  
AFOSR-TR-71-1982  
PROTECTION OF AIRCREWS FROM  
HIGH TEMPERATURES: USE OF A WATER-  
COOLED GARMENT FOR HEAT BALANCE  
STUDIES IN MAN.  
AD-727 222

•AIR FORCE ROCKET PROPULSION LAB  
EDWARDS AFB CALIF

• • •  
AFRPL-TR-70-135  
ROCKET PROPELLANT HANDLER'S  
SUIT.  
AD-876 932

• • •  
AFRPL-TR-71-44  
A ROCKET PROPELLANT HANDLER'S  
SUIT FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL FLUORINE.  
AD-731 556

•AIR FORCE SYSTEMS COMMAND WASHINGTON  
D C

• • •  
WILFY POST: FIRST TEST OF HIGH  
ALTITUDE PRESSURE SUITS IN THE  
UNITED STATES.  
AD-616 952

•AIRCRAFT GROUND FIRE SUPPRESSION AND  
RESCUE WRIGHT-PATTERSON AFB OHIO

• • •  
AGFSRS-71-2  
FIRE FIGHTER'S EXPOSURE STUDY.  
AD-722 774

•AMERICAN CYANAMID CO STAMFORD CONN

• • •  
DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.  
(USA-NLABS-TR-73-21-CE)  
AD-756 457

•ANTIOCH COLL YELLOW SPRINGS OHIO

• • •  
HEIGHT-WEIGHT SIZING OF  
PROTECTIVE GARMENTS, BASED ON  
JAPANESE AIR SELF-DEFENSE FORCE  
PILOT DATA, WITH FIT-TEST RESULTS.

(AHRL-TDR64 66)  
AD-606 039

•APPLIED PSYCHOLOGICAL SERVICES INC  
WAYNE PA SCIENCE CENTER

• • •  
A PORTABLE TEST BATTERY FOR  
COMPARATIVELY EVALUATING OPERATOR  
PERFORMANCE IN FULL-PRESSURE SUIT  
ASSEMBLIES.  
(AHRL-TR-68-74)  
AD-680 825

•ARCTIC AEROMEDICAL LAB FORT  
WAINWRIGHT ALASKA

• • •  
AAL-TDR-64-23  
PROJECT COLD CASE.  
AD-462 767

•ARMY AEROMEDICAL RESEARCH LAB FORT  
RUCKER ALA

• • •  
USAARL-71-19  
ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION,  
AD-732 429

• • •  
USAARL-71-24  
THE TESTING OF THERMAL  
PROTECTIVE CLOTHING IN A  
REPRODUCIBLE FUEL FIRE ENVIRONMENT.  
A FEASIBILITY STUDY.  
AD-729 362

•ARMY AEROMEDICAL RESEARCH UNIT FORT  
RUCKER ALA

• • •  
USAARU-69-1  
USER EVALUATIONS OF TWO AIRCREW  
PROTECTIVE HELMETS.  
AD-674 184

•ARMY ARMOR AND ENGINEER BOARD FORT  
KNOX KY

• • •  
SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE CREWMEN  
(SUMMER).

0-5  
UNCLASSIFIED

/ZOH00

UNCLASSIFIED

ARM-ARM

AD-856 281

• • •  
SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE CREWMEN  
(UNITED).  
AD-856 632

•ARMY CONCEPT TEAM IN VIETNAM SAN  
FRANCISCO CALIF 96243

• • •  
EVALUATION OF CREW MEMBER'S  
IMPROVED FIRE RESISTANT FLIGHT  
COVERALLS.  
AD-814 366

• • •  
TROPICAL COMBAT UNIFORM  
(PONCHOS AND GROUND CLOTHS).  
AD-815 865

•ARMY CONCEPT TEAM IN VIETNAM SAN  
FRANCISCO CALIF 96384

• • •  
EVALUATION OF FIRE RETARDANT  
FLIGHT GLOVES (NOMEX). (ACA-63/671).  
AD-826 388

•ARMY ELECTRONIC PROVING GROUND FORT  
HUACHUCA ARIZ

• • •  
USAEPG-FR-525  
ENGINEERING TEST OF PROTECTIVE  
HELMET SPH-4.  
AD-862 006

•ARMY FOREIGN SCIENCE AND TECHNOLOGY  
CENTER CHARLOTTEVILLE VA

• • •  
FSTC-HT-23-368-71  
FUNCTIONAL SPECIAL CLOTHING FOR  
BUILDERS,  
AD-742 816

•ARMY FOREIGN SCIENCE AND TECHNOLOGY  
CENTER WASHINGTON D C

• • •  
FSTC-HT-23-352-68  
STORAGE OF CHEMICAL AGENTS (I).  
SPECIAL CLOTHING FOR WORKING IN  
WAREHOUSES (II).  
AD-841 293

• • •

FSTC-HT-23-787-68

WORK CLOTHES,  
AD-688 057

•ARMY GENERAL EQUIPMENT TEST ACTIVITY  
FORT LEE VA

• • •  
ENGINEERING TEST OF SPIKE  
RESISTANT INSOLE.  
AD-474 980

• • •  
ENGINEERING TEST OF PONCHO.  
LIGHTWEIGHT (LINCLOE).  
AD-817 192

• • •  
ENGINEERING TEST OF JUNGLE HAT  
WITH HEADNET.  
AD-835 403

• • •  
ENGINEERING TEST OF BOOT,  
COMBAT, MOUNTAIN AND SKI.  
AD-835 549

• • •  
ENGINEERING TEST OF CLOTHING  
SYSTEM (SUMMER UNIFORM) FOR ARMY  
AVIATION CREW MEMBERS.  
AD-850 180

• • •  
ENGINEERING TEST OF FUNCTIONAL  
SUMMER UNIFORM FOR ARMORED VEHICLE  
CREWMEN.  
AD-856 438

•ARMY LAND WARFARE LAB ABERDEEN  
PROVING GROUND MD

• • •  
LWL-TR-74-13  
UH-1 DOOR GUNNER PROTECTION.  
AD-782 112

•ARMY LIMITED WAR LAB ABERDEEN  
PROVING GROUND MD

• • •  
LWL-TR-66-07  
VENTILATED FLIGHT SUIT.  
AD-644 611

•ARMY NATICK LABS MASS

• • •  
MODERN COUNTER-SURVEILLANCE IN  
COMBAT CLOTHING.

UNCLASSIFIED

ARM-ARM

AD-713 573

• • •  
MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) CLOTHING SYSTEMS  
FOR MILITARY APPLICATIONS.  
AD-713 581

• • •  
USA-NLABS-TR-66-3-CM  
THERMAL-PHYSICAL PARAMETERS OF  
MATERIALS.  
AD-631 295

• • •  
USA-NLABS-TR-67-5-CM  
RESEARCH AND DEVELOPMENT OF  
BLAST PROTECTIVE FOOTWEAR,  
FABRICATION AND PROOFTESTING.  
AD-648 417

• • •  
USA-NLABS-TR-67-45-CM  
DEVELOPMENT, FABRICATION AND  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTIPERSONNEL  
MINES USING A SUPPLEMENTARY DEVICE.  
AD-813 883

• • •  
USA-NLABS-TR-67-53-CM  
ADVANCES IN THE DEVELOPMENT OF  
HEAD PROTECTION FOR AIRCRAFT  
CREWMEN.  
AD-665 388

• • •  
USA-NLABS-TR-68-21-CM  
ENGINEERING RESEARCH PROTOTYPE  
DISTRIBUTION SYSTEMS FOR  
THERMALIBRIUM CLOTHING.  
AD-666 226

• • •  
USA-NLABS-TR-68-44-CM  
FLOW OF HEAT AND VAPOR THROUGH  
COMPOSITE PERM-SELECTIVE MEMBRANES  
UNDER SIMULATED CONDITIONS.  
AD-671 681

• • •  
USA-NLABS-TR-68-58-CE  
MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) PROTECTIVE CLOTHING  
SYSTEM FOR MILITARY APPLICATIONS.  
AD-682 715

• • •  
USA-NLABS-TR-68-63-CM  
DEVELOPMENT OF A LIGHTWEIGHT

BUTYL-COATED STRETCH FABRIC.  
AD-677 118

• • •  
USA-NLABS-TR-69-31-CM  
INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.  
AD-691 144

• • •  
USA-NLABS-TR-69-48-CE  
PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.  
AD-682 730

• • •  
USA-NLABS-TR-70-37-CE  
DEVELOPMENT OF A PERSONAL  
COOLING SYSTEM FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.  
AD-702 245

• • •  
USA-NLABS-TR-70-59-CE  
A STUDY OF SEAM LEAKAGE IN  
COATED FABRICS.  
AD-708 874

• • •  
USA-NLABS-TR-71-5-CE  
FLOW OF HEAT AND WATER VAPOR  
THROUGH PROTECTIVE CLOTHING.  
AD-712 994

• • •  
USA-NLABS-TR-71-40-CE  
THE BEHAVIOR OF PROTECTIVE  
UNIFORMS IN LARGE-SCALE SIMULATED  
FIRES.  
AD-724 648

• • •  
USA-NLABS-TR-72-2-CE  
INVESTIGATION OF METHODS FOR  
IMPROVING THE FRICTIONAL PROPERTIES  
OF RUBBER COMPOUNDS USED IN  
FOOTWEAR.  
AD-733 312

• • •  
USA-NLABS-TR-72-26-CE  
THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM.  
AD-737 720

• • •  
USA-NLABS-TR-72-61-CE  
VENTILATING BACKPACK FOR THE

0-7

UNCLASSIFIED

/ZOMOB

UNCLASSIFIED

ARM-ARM

SUIT SYSTEM, TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
(CH PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).

AD-748 838

USA-NLABS-TR-73-21-CE  
DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.

AD-766 457

USA-NLABS-TR-73-57-CE  
FOOTWEAR FOR INUNDATED AREAS.

AD-766 684

•ARMY NATICK LABS MASS MECHANICAL  
ENGINEERING DIV

USA-NLABS-TR-66-50-ME  
INVESTIGATION OF THE  
PERFORMANCE OF AN OPEN-FLAME  
CONVECTOR.

AD-636 398

•ARMY NATICK LABS MASS CLOTHING AND  
ORGANIC MATERIALS LAB

C/ED-45  
ADVANCES IN THE DEVELOPMENT OF  
HEAD PROTECTION FOR AIRCRAFT  
CREWMEN.

(USA-NLABS-TR-67-53-CM)

AD-665 388

C/OM-16  
THERMAL-PHYSICAL PARAMETERS OF  
MATERIALS.

AD-631 295

C/OM-37  
ENGINEERING RESEARCH PROTOTYPE  
DISTRIBUTION SYSTEMS FOR  
THERMALIBRIUM CLOTHING.

AD-666 226

C/OM-45  
FLOW OF HEAT AND VAPOR THROUGH  
COMPOSITE PERM-SELECTIVE MEMBRANES  
UNDER SIMULATED CONDITIONS.

AD-671 681

C/OM-48  
DEVELOPMENT OF A LIGHTWEIGHT  
BUTYL-COATED STRETCH FABRIC.

AD-677 118

C/OM-54  
PASSIVE THERMAL CONTROL SYSTEMS  
FOR ADVANCED SPACE SUIT CONCEPTS.

AD-714 224

C/OM-56  
INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.

AD-691 144

C/OM-TS-141  
RESEARCH AND DEVELOPMENT OF  
BLAST PROTECTIVE FOOTWEAR,  
FABRICATION AND PROOFTESTING.

AD-648 417

C/OM-TS-144  
DEVELOPMENT, FABRICATION AND  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTIPERSONNEL  
MINES USING A SUPPLEMENTARY DEVICE.

AD-813 883

•ARMY NATICK LABS MASS CLOTHING AND  
PERSONAL LIFE SUPPORT EQUIPMENT LAB

C/PLSEL-58  
PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.

(USA-NLABS-TR-69-48-CE)

AD-682 730

C/PLSEL-60  
MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) PROTECTIVE CLOTHING  
SYSTEM FOR MILITARY APPLICATIONS.

(USA-NLABS-TR-68-58-CE)

AD-682 715

C/PLSEL-69  
DEVELOPMENT OF A PERSONAL  
COOLING SYSTEM FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.

(USA-NLABS-TR-70-37-CE)

0-8  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

ARM-ARM

AD-702 245

• • •  
C/PLSEL-78  
FLOW OF HEAT AND WATER VAPOR  
THROUGH PROTECTIVE CLOTHING.  
(USA-NLABS-TR-71-5-CE)

AD-712 994

• • •  
C/PLSEL-88  
INVESTIGATION OF METHODS FOR  
IMPROVING THE FRICTIONAL PROPERTIES  
OF RUBBER COMPOUNDS USED IN  
FOOTWEAR.  
(USA-NLABS-TR-72-2-CE)

AD-733 312

• • •  
C/PLSEL-91  
THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM.  
AD-737 720

• • •  
C/PLSEL-96  
VENTILATING BACKPACK FOR THE  
SUIT SYSTEM, TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
(CA PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).  
AD-748 838

• • •  
C/PLSEL-109  
FOOTWEAR FOR (UNDATED AREAS.  
(USA-NLABS-TR-73-67-CE)  
AD-746 684

• • •  
C/PLSEL-72-101  
DEVELOPMENT OF LAMINATED FABRIC  
MATE-1015.  
AD-756 867

• • •  
C/PLSEL-TS-149  
A STUDY OF SEAM LEAKAGE IN  
COATED FABRICS.  
(USA-NLABS-TR-70-59-CE)  
AD-708 874

• • •  
C/PLSEL-TS-172  
THE BEHAVIOR OF PROTECTIVE  
UNIFORMS IN LARGE-SCALE SIMULATED  
FIRES.  
(USA-NLABS-TR-71-40-CE)  
AD-724 648

• • •  
USA-NLABS-25-CE  
PASSIVE THERMAL CONTROL SYSTEMS  
FOR ADVANCED SPACE SUIT CONCEPTS.  
(C/OM-54)  
AD-714 224

• • •  
USA-NLABS-73-15-CE  
DEVELOPMENT OF LIGHTWEIGHT  
(COLD-WET) INSULATED FOOTWEAR.  
AD-746 690

• ARMY NATICK LABS MASS PIONEERING  
RESEARCH LAB

• • •  
USA-NLABS-TR-69-44-PR  
RESEARCH ON ACOUSTICAL PROBLEMS  
OF THE MILITARY: A REVIEW AND  
FUTURE ASPECT.  
AD-680 165

• ARMY RESEARCH INST OF ENVIRONMENTAL  
MEDICINE NATICK MASS

• • •  
THE ARCTIC SOLDIER: POSSIBLE  
RESEARCH SOLUTIONS FOR HIS  
PROTECTION.  
AD-613 189

• • •  
THEY: VERSUS 'DRY' SUIT  
APPROACHES TO WATER IMMERSION  
PROTECTIVE CLOTHING.  
AD-638 892

• • •  
MOISTURE TRANSFER THROUGH  
IMPERMEABLE FOAM INSULATIONS.  
AD-665 042

• • •  
A METHOD OF RELATING PHYSIOLOGY  
AND MILITARY PERFORMANCE: A STUDY  
OF SOME EFFECTS OF VAPOR BARRIER  
CLOTHING IN A HOT CLIMATE.  
AD-672 876

• • •  
TACTICAL IMPLICATIONS OF THE  
PHYSIOLOGICAL STRESS IMPOSED BY  
CHEMICAL PROTECTIVE CLOTHING  
SYSTEMS.  
AD-713 530

• ARMY TEST AND EVALUATION COMMAND

/ZONOS

0-9  
UNCLASSIFIED

ARM-BUR

UNCLASSIFIED

ABERDEEN PROVING GROUND MD  
\* \* \*  
MTP-7-2-087  
CLOTHING (AVIATION).  
AD-723 030  
\* \* \*  
MTP-7-3-087  
CLOTHING (AVIATION).  
AD-719 106  
\* \* \*  
MTP-8-2-041  
BOOTS, CB PROTECTIVE.  
AD-719 112  
\* \* \*  
MTP-8-2-043  
HOODS, PROTECTIVE.  
AD-719 113  
\* \* \*  
MTP-8-4-006  
ARCTIC ENVIRONMENTAL TEST OF CB  
PROTECTIVE CLOTHING, PROTECTIVE  
MASKS AND WINTERIZATION KITS.  
AD-719 131  
\* \* \*  
MTP-10-3-021  
COMBAT UNIFORMS.  
AD-873 485  
\* \* \*  
TOP-8-3-041  
CLOTHING AND EQUIPMENT,  
INDIVIDUAL, PROTECTIVE, CB.  
AD-752 128  
\* \* \*  
TOP-10-2-021  
COMBAT UNIFORMS AND PROTECTIVE  
EQUIPMENT.  
AD-763 001  
\* \* \*  
TOP-10-3-021  
COMBAT UNIFORMS.  
AD-748 091  
\* \* \*  
TOP-10-3-215  
GARMENTS, OUTER (WET WEATHER).  
AD-755 643  
\* ARMY TROPIC TEST CENTER FORT CLAYTON  
CANAL ZONE  
\* \* \*  
USATTC-6903002  
TROPIC SERVICE TEST OF

FUNCTIONAL UNIFORM FOR ARMORED  
VEHICLE CREWMEN.  
AD-857 571  
\* ASTRO RESEARCH CORP SANTA BARBARA  
CALIF  
\* \* \*  
ARC-R-286  
SLIP NET MOBILITY JOINTS FOR  
PRESSURE SUITS.  
(AMRL-TR-68-94)  
AD-848 605  
\* BIOTECHNOLOGY INC ARLINGTON VA  
\* \* \*  
64-3  
EFFECTIVE LIFE SUPPORT HELMETS.  
AD-636 044  
\* BIOTECHNOLOGY INC FALLS CHURCH VA  
\* \* \*  
INVESTIGATION AND  
RECOMMENDATIONS CONCERNING  
PROTECTIVE CLOTHING AND EQUIPMENT  
FOR NAVY PERSONNEL ON FLIGHT AND  
HANGAR DECKS OF AIRCRAFT CARRIERS.  
AD-872 758  
\* BUREAU OF MEDICINE AND SURGERY  
WASHINGTON D C  
\* \* \*  
NAVHED-M4306.02-6010B-1  
EVALUATION OF THE NSRDL HEATER  
PUMP PERFORMANCE CHARACTERIZATICS  
AND RELIABILITY.  
AD-694 023  
\* \* \*  
NAVHED-M4306.02-6010B-2  
THEORETICAL THERMAL  
REQUIREMENTS FOR THE MARK II DIVING  
SYSTEM.  
AD-694 013  
\* \* \*  
NAVHED-M4306.02-6010B-3  
DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.  
AD-727 606  
\* \* \*  
NAVHED-M4306.07-1003-3  
EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER

0-10  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

CHA-000

SYSTEM.  
AD-706 064

• • •  
NAVMED-MF-011.99-1001.7  
AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCREWS.  
AD-637 153

• • •  
NAVMED-MR005.13-4001.06  
CURRENT CONCEPTS AND PRACTICES  
APPLICABLE TO THE CONTROL OF BODY  
HEAT LOSS IN AIRCREW SUBJECTED TO  
WATER IMMERSION.  
AD-636 052

• CHANCE VOUGHT CORP DALLAS TEX

• • •  
CVC-00.252  
INTEGRATED BACK-PACK  
MANEUVERING UNIT PROPULSION STUDY  
AND EXHAUST PLUME HEATING ANALYSIS.  
(ASD-YDR63 729)  
AD-609 206

• CIVIL AEROMEDICAL INST OKLAHOMA CITY  
OKLA

• • •  
A PROTECTIVE PASSENGER SMOKE  
HOOD.  
(FAA-AH-67-4)  
AD-667 436

• • •  
PROTECTIVE SMOKE HOOD STUDIES.  
(FAA-AH-70-20)  
AD-727 021

• CLARK (DAVID) CO INC WORCESTER MASS

• • •  
RESEARCH AND DEVELOPMENT OF  
EXTRAVEHICULAR PROTECTIVE ASSEMBLY.  
(AMRL-TR-66-143)  
AD-647 197

• • •  
DESIGN AND FABRICATION OF A  
PASSIVELY PRESSURIZED SUIT.  
(AMRL-TR-70-120)  
AD-720 827

• COAST GUARD BALTIMORE MD FIELD

TESTING AND DEVELOPMENT CENTER  
• • •

481  
EVALUATION OF ONE PIECE WET  
SUITS.  
AD-669 230

• CORNELL AERONAUTICAL LAB INC BUFFALO  
N Y

• • •  
CAL-MM-2972-Z-1  
FIRE FIGHTER'S EXPOSURE STUDY.  
(AGFSRS-71-2)  
AD-722 774

• DEFENCE RESEARCH ESTABLISHMENT OTTAWA  
(ONTARIO)

• • •  
DREC-R-496  
COVERALL, CW PROTECTIVE;  
STORAGE AND PACKAGING.  
AD-781 520

• DEFENCE RESEARCH INFORMATION CENTRE  
ORPINGTON (ENGLAND)

• • •  
DRIC-BR-30290  
ASSESSMENT OF THE THERMAL  
RESISTANCE OF CLOTHING.  
AD-750 830

• • •  
DRIC-BR-300894  
CALCULATION OF THE THERMAL  
RESISTANCE OF THE AIR LAYERS IN AIR-  
PERMEABLE CLOTHING.  
AD-746 037

• • •  
DRIC-TRANS-2717  
CALCULATION OF THE THERMAL  
RESISTANCE OF THE AIR LAYERS IN AIR-  
PERMEABLE CLOTHING.  
AD-746 037

• • •  
DRIC-TRANS-2920  
ASSESSMENT OF THE THERMAL  
RESISTANCE OF CLOTHING.  
AD-750 830

• DOUGLAS AIRCRAFT CO INC HUNTINGTON  
BEACH CALIF MISSILE AND SPACE  
SYSTEMS DIV

0-11  
UNCLASSIFIED

/Z0008



UNCLASSIFIED

EDG-GEN

- • •  
MOL ZERO G DEVELOPMENT TEST  
REPORT, DD FORM 1423 DATA ITEM UT-  
(110).  
AD-856 542
- EDGEWOOD ARSENAL ABERDEEN PROVING  
GROUND MD  
• • •  
FA-TR-4757  
THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.  
AD-770 378  
• • •  
FA-TR-73011  
THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.  
AD-770 378
- EDGEWOOD ARSENAL MD  
• • •  
FA-TR-4629  
EVAPORATIVE COOLING OF MEN IN  
WET CLOTHING.  
AD-740 738
- FABRIC RESEARCH LABS INC DEDHAM MASS  
• • •  
DEVELOPMENT OF THERMALLY  
DURABLE COATED FABRICS FOR USE IN  
FLIGHT GLOVES.  
(ASD-TR-71-47)  
AD-737 099  
• • •  
DEVELOPMENT OF PBI FABRIC FOR  
FLIGHT SUIT WEAR TEST.  
(AFYL-TR-71-195)  
AD-914 019
- FEDERAL AVIATION ADMINISTRATION  
WASHINGTON D C OFFICE OF AVIATION  
MEDICINE  
• • •  
FAA-AH-67-4  
A PROTECTIVE PASSENGER SMOKE  
HOOD.  
AD-657 436  
• • •  
FAA-AH-70-20

- PROTECTIVE SMOKE HOOD STUDIES.  
AD-727 021
- FLYING PERSONNEL RESEARCH COMMITTEE  
LONDON (ENGLAND)  
• • •  
FPRC-1307  
A LABORATORY COMPARISON OF  
THREE METHODS OF PERSONAL  
CONDITIONING.  
AD-722 857
- FOREIGN TECHNOLOGY DIV WRIGHT-  
PATTERSON AFB OHIO  
• • •  
FTD-HT-23-1314-67  
THE OUTFITTING OF THE PILOT AND  
THE COSMONAUT.  
AD-682 156  
• • •  
FTD-HT-23-1557-74  
FABRIC-PROTECTORS.  
AD-781 309  
• • •  
FTD-HT-44-683  
SPACE SUITS - SPACE FASHION  
(RAUMANZUEGE - MODE DES KOSMOS).  
AD-823 299  
• • •  
FTD-TT-65-604  
SPACE CLOTHING OF SUBJUGATORS  
OF OUTER SPACE.  
(TT-65-63335)  
AD-620 099
- GAGLIARDI RESEARCH CORP EAST  
GREENWICH R I  
• • •  
DEVELOPMENT OF CHARCOAL  
IMPREGNATION PROCESS FOR CW  
PROTECTIVE OVERGARMENT.  
AD-805 099
- GENERAL ELECTRIC CO PHILADELPHIA PA  
MISSILE AND SPACE DIV  
• • •  
EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM  
(AHLR-YOR44 60)  
AD-608 088

0-12  
UNCLASSIFIED

/ZON08

UNCLASSIFIED

GRA-KAN

•GRACE (W R) AND CO CLARKSVILLE MD  
RESEARCH DIV

• • •  
RES-70-41  
RESEARCH AND FEASIBILITY  
STUDIES ON CLOTHING AND  
DECONTAMINATION.  
AD-876 647

•HAMILTON STANDARD WINDSOR LOCKS CONN

• • •  
ENGINEERING DESIGN STUDY OF A  
SPACE SUIT WITH AN INTEGRATED  
ENVIRONMENTAL CONTROL SYSTEM.  
(AMRL-TR-68-122)  
AD-680 826

• • •  
INTEGRATED MANEUVERING LIFE  
SUPPORT SYSTEM.  
(AMRL-TR-69-132)  
AD-714 577

•HAMILTON STANDARD DIV UNITED AIRCRAFT  
CORP WINDSOR LOCKS CONN

• • •  
HSE-3671  
A STUDY OF TECHNIQUES AND  
EQUIPMENT FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE GARMENTS.  
(AMRL-TR-66-4)  
AD-635 206

•HONEYWELL INC ST PAUL MINN RESEARCH  
DEPT

• • •  
12045-FR1  
AUTOMATIC TEMPERATURE CONTROL  
FOR LIQUID-COOLED FLIGHT SUITS.  
(NADC-AC-6702)  
AD-645 834

•IIT RESEARCH INST CHICAGO ILL

• • •  
RESEARCH AND DEVELOPMENT OF  
BLAST PROTECTIVE FOOTWEAR,  
FABRICATION AND PROOFTESTING.  
(USA-NLABS-TR-67-5-CH)  
AD-648 417

• • •  
METEOROID THREAT TO  
EXTRAVEHICULAR SPACE SUIT

ASSEMBLIES.  
(AMRL-TR-68-86)  
AD-691 461

• • •  
DEVELOPMENT, FABRICATION AND  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTIPERSONNEL  
MINES USING A SUPPLEMENTARY DEVICE.  
(USA-NLABS-TR-67-45-CH)  
AD-813 883

• • •  
IITRI-J6028-1  
SURVEY OF THERMAL CONTROL  
TECHNIQUES FOR EXTRAVEHICULAR SPACE  
SUITS.  
(AMRL-TR-68-87)  
AD-687 149

• • •  
IITRI-J6028-FR  
EXPLORATORY DEVELOPMENT OF  
PRESSURE SUIT MOBILITY JOINTS,  
GLOVES AND HELMET.  
(AMRL-TR-69-64)  
AD-711 676

• • •  
IITRI-J6181-FR  
EXPLORATORY DEVELOPMENT OF  
PARTIAL PRESSURE HELMET AND  
MOBILITY JOINTS FOR EMERGENCY  
PRESSURE SUIT OUTFITS.  
(AMRL-TR-70-111)  
AD-720 276

•JOHNS HOPKINS UNIV SILVER SPRING MD  
APPLIED PHYSICS LAB

• • •  
APL-TG-945  
AIRCREW COOLING STUDY.  
AD-668 139

•KANSAS STATE UNIV MANHATTAN COLL OF  
ENGINEERING

• • •  
WATER COOLED HOOD AFFECTS  
CREATIVE PRODUCTIVITY,  
(AFOSR-TR-71-1364)  
AD-724 020

•KANSAS STATE UNIV MANHATTAN DEPT OF  
INDUSTRIAL ENGINEERING

0-13  
UNCLASSIFIED

/ZOM08

KAN-HAU

UNCLASSIFIED

THEMIS-SR-81  
A COOLING HOOD IN HOT-HUMID  
ENVIRONMENTS.  
(AFOSR-69-0574TR)  
AD-684 582

• KANSAS STATE UNIV MANHATTAN INST FOR  
ENVIRONMENTAL RESEARCH

• • •  
PROCEEDINGS OF THE SYMPOSIUM ON  
INDIVIDUAL COOLING, MARCH 17-18,  
1969.  
(AFOSR-69-2397TR)  
AD-694 130

• KENTUCKY UNIV LEXINGTON

• • •  
SENSIBLE HEAT TRANSFER IN THE  
GEMINI AND APOLLO PRESSURE SUITS.  
(AMRL-66-173)  
AD-647 828

• LIBRARY OF CONGRESS WASHINGTON D C  
AEROSPACE TECHNOLOGY DIV

• • •  
ATD-66-67  
SOVIET HIGH ALTITUDE EQUIPMENT  
FOR AIRCREW PROTECTION.  
(TT-67-60028)  
AD-642 178

• • •  
ATD-68-6-22-1  
AEROSPACE LIFE SUPPORT SYSTEMS  
AND CREW PROTECTIVE EQUIPMENT.  
AD-668 840

• • •  
ATD-T-65-13  
HIGH-ALTITUDE PRESSURE SUITS  
AND HERMETICALLY SEALED CABINS FOR  
STRATOSPHERIC FLIGHTS.  
AD-498 909

• LITTLE (ARTHUR D) INC CAMBRIDGE MASS

• • •  
STUDY AND DEVELOPMENT OF  
MATERIALS AND TECHNIQUES FOR  
PASSIVE THERMAL CONTROL OF FLEXIBLE  
EXTRAVEHICULAR SPACE GARMENTS.  
(AMRL-TR-65-156)  
AD-474 486

TECHNIQUES AND MATERIALS FOR  
PASSIVE THERMAL CONTROL OF RIGID  
AND FLEXIBLE EXTRAVEHICULAR SPACE  
ENCLOSURES.  
(AMRL-TR-67-128)  
AD-646 940

• • •  
RESEARCH TO ADVANCE  
EXTRAVEHICULAR PROTECTIVE  
TECHNOLOGY.  
(AMRL-TR-66-250)  
AD-818 964

• LITTON SYSTEMS INC BEVERLY HILLS  
CALIF SPACE SCIENCES LABS

• • •  
PUB-4932  
RESEARCH AND DEVELOPMENT OF  
HELMET FACEPIECES FOR SPACE  
PROTECTIVE ASSEMBLIES.  
(AMRL-TR-66-193)  
AD-652 248

• LITTON SYSTEMS INC MINNEAPOLIS MINN  
APPLIED SCIENCE DIV

• • •  
INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.  
(USA-NLABS-TR-69-31-CM)  
AD-691 144

• LITTON SYSTEMS INC ST PAUL MINN  
APPLIED SCIENCE DIV

• • •  
THERMAL-PHYSICAL PARAMETERS OF  
MATERIALS.  
(USA-NLABS-TR-66-3-CM)  
AD-631 295

• LOCKHEED MISSILES AND SPACE CO  
SUNNYVALE CALIF

• • •  
6-62-64-19  
STUDY OF HUMAN PERFORMANCE IN A  
MARK IV PRESSURE SUIT.  
AD-619 029

• NAUCH LABS INC DAYTON OHIO  
• • •  
EXPERIMENTAL SPACE WORKER'S

0-14  
UNCLASSIFIED

/ZOMOU

UNCLASSIFIED

MCD-NAV

GARMENT AND HELMET ASSEMBLY.  
(AMRL-TDR-64-37)  
AD-738 088

•MCDONNELL CO ST LOUIS MO

• • •  
DBS-ATC-U2  
CONDENSATE WETTING OF SUIT HEAT  
EXCHANGER WATER SEPARATOR PLATES.  
AD-856 891

• • •  
DBS-ATC-Q6  
REVERSE PRESSURE EFFECT ON SUIT  
DEMAND REGULATOR.  
AD-856 673

•NINE SAFETY APPLIANCES CO PITTSBURGH  
PA

• • •  
ENGINEERING RESEARCH PROTOTYPE  
DISTRIBUTION SYSTEMS FOR  
THERMALBRIUM CLOTHING.  
(USA-NLABS-TR-68-21-CH)  
AD-666 226

•NAVAL AEROSPACE MEDICAL INST  
PENSACOLA FLA

• • •  
NAMI-1049  
MANIKIN MEASUREMENTS OF THE  
NOISE ATTENUATION PROVIDED BY  
FLIGHT HELMETS.  
AD-676 885

•NAVAL AEROSPACE MEDICAL RESEARCH LAB  
PENSACOLA FLA

• • •  
A TECHNIQUE FOR OPTIMAL FITTING  
OF FLIGHT HELMETS.  
AD-718 327

•NAVAL AIR DEVELOPMENT CENTER  
JOHNSVILLE PA AEROSPACE MEDICAL  
RESEARCH DEPT

• • •  
NADC-MR-6607  
DEVELOPMENT OF REVISED SIMPLEX  
FABRIC FOR SUMMER FLYING GLOVES.  
AD-636 423

• • •  
NADC-MR-6619

CAMOUFLAGE PRINTING OF NOMEX  
SUMMER FLYING COVERALLS.  
AD-641 247

• • •  
NADC-MR-6713  
EVALUATION OF A WET SUIT IN  
CONJUNCTION WITH ANTI-BLACKOUT  
PROTECTION.  
AD-658 508

• • •  
NADC-MR-6809  
A METHOD AND RATING SYSTEM FOR  
EVALUATION OF THERMAL PROTECTION.  
AD-846 419

• • •  
NADC-MR-7016  
DEVELOPMENT OF PRACTICAL HIGH-  
INTENSITY THERMAL PROTECTION  
SYSTEMS.  
AD-709 570

• • •  
NADC-MR-7017  
HEAT TRANSFER THROUGH FABRICS.  
AD-712 505

•NAVAL AIR DEVELOPMENT CENTER  
JOHNSVILLE PA AEROSPACE CREW  
EQUIPMENT DEPT

• • •  
NADC-AC-6708  
PHYSIOLOGICAL EFFECTS OF  
DIFFERENT OXYGEN FLOW RATES AND  
AMBIENT TEMPERATURES ON PRESSURE-  
SUITED SUBJECTS PERFORMING WORK AT  
ALTITUDE.  
AD-663 907

• • •  
NADC-AC-6809  
FLEET EVALUATION - COVERALLS,  
FLYING, SUMMER, FIRE RESISTANT,  
POLYAMIDE, TYPE CS-FRP-1.  
AD-667 718

• • •  
NADC-AC-6906  
DESCRIPTION AND EVALUATION OF A  
PORTABLE DRY-ICE WATER-CONDITIONED  
SUIT SYSTEM FOR AIRCREWMEMBERS.  
AD-700 915

•NAVAL AIR DEVELOPMENT CENTER  
WARMINTON PA AEROSPACE CREW

0-15  
UNCLASSIFIED

/ZOMOB

UNCLASSIFIED

NAV-NAV

EQUIPMENT DEPT

NADC-AC-6702  
AUTOMATIC TEMPERATURE CONTROL  
FOR LIQUID-COOLED FLIGHT SUITS.  
AD-655 834

NADC-AC-7101  
PHYSIOLOGICAL EVALUATION OF  
SUBJECTS EXPOSED TO A COLD WATER  
ENVIRONMENT WHILE WEARING DIFFERENT  
PROTECTIVE SUIT ASSEMBLIES.  
AD-724 617

• NAVAL AIR DEVELOPMENT CENTER  
WARMINGSTER PA AEROSPACE MEDICAL  
RESEARCH DEPT

NADC-MR-6612  
DESIGN OF WOVEN AND LAMINATED  
FABRICS FOR TESTING OF THERMAL  
RESISTANCE.  
AD-638 560

NADC-MR-6715  
DEVELOPMENT OF HIGH-INTENSITY  
THERMAL PROTECTIVE FABRIC.  
AD-659 974

• NAVAL AIR ENGINEERING CENTER  
PHILADELPHIA PA AERONAUTICAL  
MATERIALS LAB

NAEC-AML-2050  
METHODS OF SANITIZING AND  
DEFODORIZING RUBBERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.  
AD-609 164

NAEC-AML-2604  
LABORATORY SHRINKAGE EVALUATION  
OF NOMEX SUMMER FLIGHT SUITS.  
AD-657 853

• NAVAL AIR ENGINEERING CENTER  
PHILADELPHIA PA AEROSPACE CREW  
EQUIPMENT LAB

METABOLIC MECHANISMS OF MAN IN  
THE FULL PRESSURE SUIT.

PHYSIOLOGICAL COST OF DONNING A  
FULL PRESSURE SUIT.  
AD-609 937

• NAVAL CIVIL ENGINEERING LAB PORT  
HUENENE CALIF

NCEL-TN-325  
IMPREGNATION PLANT IMPROVEMENT  
TESTS.  
AD-723 549

NCEL-TN-998  
CHEMICAL HEAT SOURCE FOR WET  
SUITS.  
AD-844 923

NCEL-TN-1087  
SEALAB III - DIVER'S ISOTOPIC  
SWIMSUIT-HEATER SYSTEM.  
AD-708 680

• NAVAL MEDICAL RESEARCH INST BETHESDA  
MD

CURRENT CONCEPTS AND PRACTICES  
APPLICABLE TO THE CONTROL OF BODY  
HEAT LOSS IN AIRCREW SUBJECTED TO  
WATER IMMERSION.  
(NAVHED-MR005-13-4001.04)  
AD-635 052

AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCREWS.  
(NAVHED-MF-011.99-1001.7)  
AD-637 153

PHYSIOLOGICAL EVALUATION OF A  
FREE-FLOODING DIVER HEAT  
REPLACEMENT GARMENT.  
AD-684 479

THEORETICAL THERMAL  
REQUIREMENTS FOR THE MARK II DIVING  
SYSTEM.  
(NAVHED-M4306.02-60108-2)  
AD-694 013

EVALUATION OF THE NSRD HEATER

UNCLASSIFIED

NAV-NAV

PUMP PERFORMANCE CHARACTERIZATICS  
AND RELIABILITY.  
(NAVHED-M4306-02-60108-1)  
AD-694 023

EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.  
(NAVHED-M4306-07-1003-3)  
AD-705 064

DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.  
(NAVHED-M4306-02-60108-3)  
AD-727 606

A REVIEW OF CURRENT CONCEPTS  
AND PRACTICES USED TO CONTROL BODY  
HEAT LOSS DURING WATER IMMERSION.  
AD-614 241

A REVIEW OF CURRENT CONCEPTS  
AND PRACTICES USED TO CONTROL BODY  
HEAT LOSS DURING WATER IMMERSION.  
AD-614 241

NAVAL MISSILE CENTER POINT MUGU  
CALIF

TIMED HEAT-RELEASE CHEMICAL  
SYSTEM FOR UNDERWATER APPLICATIONS:  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.  
AD-647 892

NAVAL RESEARCH LAB WASHINGTON D C

REACTIVITY OF VARIOUS DAMAGE  
CONTROL PROTECTIVE CLOTHING  
MATERIALS WITH CHLORINE  
TRIPLUORIDE.  
AD-146 062

NAVAL SCHOOL OF AVIATION MEDICINE  
PENSACOLA FLA

NSAM-SR-54-4

TEST AND EVALUATION OF U. S.  
AIR FORCE EXPERIMENTAL CUTAWAY TYPE  
ANTI-BLACKOUT SUITS DESIGNATED MA-  
1.

AD-622 047

SOUND ATTENUATION  
CHARACTERISTICS OF THE PROJECT  
MERCURY PRE-PRODUCTION FULL  
PRESSURE SUIT HELMET.  
AD-622 197

NAVAL SHIP RESEARCH AND DEVELOPMENT  
LAB PANAMA CITY FLA

EVALUATION CRITERIA FOR HEATED  
DIVER SUIT SYSTEMS.  
AD-884 560

EVALUATION OF SWIMMER EXPOSURE  
SUITS IN SUBFREEZING WATERS.  
AD-886 843

NAVAL SUBMARINE BASE NEW LONDON CONN

EVALUATION FOR SERVICE USE OF A  
PROTO-TYPE SWIMMER'S RESCUE SUIT.  
AD-663 634

NAVAL SUBMARINE MEDICAL CENTER GROTON  
CONN

FIELD EVALUATION OF MODIFIED  
SUBMARINE RESCUE AND ESCAPE SUITS.  
AD-663 886

NAVAL SUBMARINE MEDICAL CENTER GROTON  
CONN SUBMARINE MEDICAL RESEARCH LAB

THERMAL EVALUATION OF A  
POLYVINYLCHLORIDE EXPOSURE SUIT  
(EMPRESS) AND COMPARISON WITH  
PRESENT SUBMARINE DECK EXPOSURE  
SUITS.  
AD-678 376

0-17  
UNCLASSIFIED

/ZOMOB

NAV-NAV

UNCLASSIFIED

SMRL-514  
PHYSIOLOGICAL EVALUATION OF THE  
BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT DURING IMMERSION.  
AD-668 809

• • •  
•NAVAL SUBMARINE MEDICAL RESEARCH LAB  
GROTON CONN

• • •  
HUMAN FACTORS EVALUATION OF  
SUBMARINE ESCAPE: II-A. TOP  
EGRESS WITH THE BRITISH SUBMARINE  
ESCAPE IMMERSION SUIT AND THE  
STEINKE HOOD.  
AD-730 711

• • •  
NSMRL-739  
A REVIEW OF AVAILABLE HEATED  
WET-SUIT PROTECTION FOR DIVERS AND  
SWIMMERS.  
AD-768 313

•NAVY CLOTHING AND TEXTILE RESEARCH  
UNIT NATICK MASS

• • •  
PHYSIOLOGICAL EVALUATION OF  
EFFECTS ON PERSONNEL WEARING THE  
MICROWAVE PROTECTIVE SUIT AND  
OVERGARMENT.  
AD-690 890

• • •  
1-71  
PHYSIOLOGICAL EVALUATION OF A  
COMMERCIALY AVAILABLE ABANDON-SHIP  
SURVIVAL SUIT.  
AD-734 136

• • •  
1-72  
DAMAGE CONTROL SUIT SYSTEM.  
AD-762 428

• • •  
1-74  
FLAME-RETARDANT CLOTHING AND  
TEXTILE ITEMS FOR USE IN OXYGEN-  
ENRICHED ENVIRONMENTS OF  
DECOMPRESSION CHAMBERS.  
AD-779 886

• • •  
4-70  
EVALUATION OF HEAT LOSS FROM  
NAVY DIVERS' WET SUIT.

AD-747 276

• • •  
4-71  
DEVELOPMENT OF AN INTEGRAL,  
NEOPRENE-COATED, ALUMINIZED,  
ASBESTOS CLOTH FOR FIRE FIGHTERS'  
SHIPBOARD COVERALLS.  
AD-746 159

• • •  
5-71  
PROGRESS REPORT ON THE DAMAGE  
CONTROL SUIT SYSTEM.  
AD-726 698

• • •  
5-72  
DEVELOPMENT AND EVALUATION OF  
DEEP-SEA SWIMSUIT MATERIALS.  
AD-763 378

• • •  
6-71  
DEVELOPMENT AND EVALUATION OF  
AN OXYGEN-SENSING WARNING DEVICE.  
AD-735 377

• • •  
9-69  
THE DEVELOPMENT OF A BUOYANT-  
BALLON JACKET FOR NAVAL FORCES.  
AD-749 145

• • •  
10-71  
HYDROSPACE SIMULATOR FACILITY  
FOR MATERIALS TESTING.  
AD-730 696

• • •  
TR-72  
PROGRESS REPORT ON THE DAMAGE  
CONTROL SUIT SYSTEM.  
AD-726 698

• • •  
TR-97  
PHYSIOLOGICAL EVALUATION OF A  
COMMERCIALY AVAILABLE ABANDON-SHIP  
SURVIVAL SUIT.  
AD-734 136

• • •  
TR-98  
DEVELOPMENT AND EVALUATION OF  
AN OXYGEN-SENSING WARNING DEVICE.  
AD-735 377

• • •  
TR-99

3-18  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

NAVWOR

HYDROSPACE SIMULATOR FACILITY  
FOR MATERIALS TESTING.  
AD-739 695

TR-102  
EVALUATION OF HEAT LOSS FROM  
NAVY DIVERS' WET SUITS  
AD-747 276

TR-103  
DEVELOPMENT OF AN INTEGRAL,  
NEOPRENE-COATED, ALUMINIZED,  
ASBESTOS CLOTH FOR FIRE FIGHTERS'  
SHIPBOARD COVERALLS.  
AD-746 159

TR-104  
THE DEVELOPMENT OF A BUOYANT-  
BALLISTIC VEST FOR NAVAL FORCES.  
AD-749 345

TR-107  
DAMAGE CONTROL SUIT SYSTEM.  
AD-762 428

TR-108  
DEVELOPMENT AND EVALUATION OF  
DEEP-SEA SWIMSUIT MATERIALS.  
AD-763 378

TR-110  
FLAME-RETARDANT CLOTHING AND  
TEXTILE ITEMS FOR USE IN OXYGEN-  
ENRICHED ENVIRONMENTS OF  
DECOMPRESSION CHAMBERS.  
AD-779 886

NAVY ELECTRONICS LAB SAN DIEGO CALIF

NEL-1408  
DIVERS' BODY HEAT LOSS:  
DESCRIBES A STUDY OF THE ENDURANCE  
OF UNDERWATER SWIMMERS WEARING A  
VARIETY OF FOAM NEOPRENE WET SUITS  
AND IMMersed AT 30-32F IN THE NEL  
ARCTIC POOL.  
AD-662 405

NAVY EXPERIMENTAL DIVING UNIT  
WASHINGTON D C

WEDU-8-52  
SECOND SERIES U.S. RUBBER  
COMPANY LIGHTWEIGHT DIVING OUTFITS  
WITH AIRLINE AND DEMAND SUPPLY.  
AD-693 971

WEDU-EVALUATION-3-61  
EVALUATION OF MODIFIED DIVERS'  
DRESS.  
AD-777 740

WEDU-FORMAL-1-53  
CANADIAN SELF-CONTAINED DIVING  
EQUIPMENT PERFORMANCE TESTS.  
AD-692 056

WEDU-FORMAL-3-53  
COLD WATER PROTECTION UNDER  
FIELD CONDITIONS.  
AD-728 822

WEDU-LR-1-71  
EVALUATION OF LIGHTWEIGHT DEEP  
SEA DIVING DRESS.  
AD-699 928

WEDU-RR-2-67  
DIVER EQUIPMENT TESTS PERFORMED  
DURING THE JOINT U. S. NAVY/DUKE  
UNIVERSITY 1000 FOOT SATURATION  
DIVE.  
AD-692 423

WEDU-RR-3-68  
AD HOC COMMITTEE REPORT.  
AD-699 170

WEDU-RR-7-71  
PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.  
AD-729 664

WORTH AMERICAN AVIATION INC LOS  
ANGELES CALIF

WA-64-527  
MOMENTS OF INERTIA AND CENTERS  
OF GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
(ANAL-TR-64-110)  
AD-609 863

C-19  
UNCLASSIFIED

720X08



UNCLASSIFIED

NOR-ROH

•NORTHROP CORPORATE LABS HAWTHORNE  
CALIF

• • •  
NCL-47-36R  
VARIABLE THERMAL CONDUCTIVITY  
HEAT TRANSFER RESEARCH FOR PERSONAL  
PROTECTIVE ASSEMBLIES.  
(AMRL-TR-67-190)  
AD-668 765

• • •  
NCL-67-70R  
INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.  
(AMRL-TR-69-112)  
AD-702 124

•NORTHROP SPACE LABS HAWTHORNE CALIF

• • •  
NSL-67-177  
PRESSURE SEALING CLOSURES FOR  
FULL PRESSURE PROTECTIVE SUIT  
ASSEMBLIES.  
(AMRL-TR-67-59)  
AD-658 274

•NORTHROP SPACE LABS HAWTHORNE CALIF  
SPACE MATERIALS LAB

• • •  
RESEARCH ON CLOSED-CELL SPONGE  
AS A PRESSURE TECHNIQUE FOR  
PROTECTIVE ASSEMBLIES.  
(AMRL-TR-66-183)  
AD-652 653

•PRODESCO INC PERKASIE PA

• • •  
DESIGN OF WOVEN AND LAMINATED  
FABRICS FOR TESTING OF THERMAL  
RESISTANCE.  
(NADC-MR-6612)  
AD-638 560

• • •  
PNAS-94  
DEVELOPMENT OF HIGH-INTENSITY  
THERMAL PROTECTIVE FABRIC.  
(NADC-MR-6715)  
AD-659 974

•QUARTERMASTER RESEARCH AND  
DEVELOPMENT CENTER NATICK MASS

• • •  
RESEARCH-STUDY-BP-3  
SOME EFFECTS OF ABSORBENCY OF  
CLOTHING MATERIALS.  
AD-655 147

•QUARTERMASTER RESEARCH AND  
ENGINEERING CENTER NATICK MASS

• • •  
QREC-EPR-1  
HUMAN FACTORS STUDY OF QMC  
CLOTHING AND EQUIPMENT DURING COLD  
WEATHER TESTS OF THE PERSHING  
MISSILE SYSTEM.  
AD-701 872

• • •  
QREC-EPR-2  
HUMAN FACTORS STUDY OF QMC  
CLOTHING AND EQUIPMENT DURING COLD  
WEATHER TESTS OF THE SERGEANT  
MISSILE SYSTEM, II.  
AD-701 864

• • •  
QREC-FPB-2  
SLEEPING PROTECTION FOR WARM  
AND COOL ENVIRONMENTS; THE EFFECT  
OF UTILIZING AN ATTACHABLE PONCHO  
LINER.  
AD-701 874

•RAND DEVELOPMENT CORP CLEVELAND OHIO

• • •  
THE USE OF LINES OF  
NONEXTENSION TO IMPROVE MOBILITY IN  
FULL-PRESSURE SUITS.  
(AMRL-TR64 118)  
AD-610 519

•RHODE ISLAND UNIV KINGSTON

• • •  
FLOW OF HEAT AND VAPOR THROUGH  
COMPOSITE PERM-SELECTIVE MEMBRANES  
UNDER SIMULATED CONDITIONS.  
(USA-NLABS-TR-68-44-CM)  
AD-671 681

•ROHM AND HAAS CO WARREN R I RHEE DIV

• • •  
DEVELOPMENT OF A LIGHTWEIGHT  
BUTYL-COATED STRETCH FABRIC.  
(USA-NLABS-TR-68-63-CM)

0-20

UNCLASSIFIED

/ZOK08

UNCLASSIFIED

SAN-UNI

AD-677 118

•SANDERS NUCLEAR CORP NASHUA N H

• • •  
FEASIBILITY STUDY AND  
CONCEPTUAL DESIGN FOR A PERSONAL  
THERMAL CONDITIONING SYSTEM.  
(AMD-TR-68-1)

AD-670 212

•SCHOOL OF AEROSPACE MEDICINE BROOKS  
AFB TEX

• • •  
SAM-TR-67-15  
PRELIMINARY STUDIES ON A NEW  
PARTIAL-PRESSURE SUIT CONCEPT.  
AD-652 207

• • •  
SAM-TR-67-91  
FLAME PROTECTION AFFORDED MICE  
BY A NONCOMBUSTIBLE GARMENT IN 100%  
OXYGEN ATMOSPHERES.  
AD-665 833

• • •  
SAM-TR-72-436  
+G(1) PROTECTION AFFORDED BY  
STANDARD AND PREACCELERATION  
INFLATIONS OF THE BLADDER AND  
CAPSTAN TYPE G-SUITS.  
AD-761 779

•STANFORD RESEARCH INST MENLO PARK  
CALIF NAVAL WARFARE RESEARCH CENTER

• • •  
NWRC-RM-50  
NAVAL APPLICATIONS OF MAN-IN-  
THE-SEA CONCEPTS - MISSION  
DEFINITION.  
AD-843 709

•SYSTEMS ENGINEERING GROUP RESEARCH  
AND TECHNOLOGY DIV WRIGHT-  
PATTERSON AFB OHIO

• • •  
SEG-TR-66-7  
EVALUATION OF IMPROVED  
EXHALATION VALVE FOR HGU-8/P FLYING  
HELMET.  
AD-633 952

•SYSTEMS ENGINEERING GROUP WRIGHT-

PATTERSON AFB OHIO

• • •  
SEG-TR-65-9  
COMPARATIVE EVALUATION OF USAF  
STANDARD A/P22S-2 AND IMPROVED  
A/P22S-2A HIGH ALTITUDE, FULL  
PRESSURE FLYING OUTFITS.  
AD-467 823

•TACTICAL AIR WARFARE CENTER EGLIN  
AFB FLA

• • •  
TAC-TEST-68-203  
VENTILE ANTI-EXPOSURE SUIT.  
AD-838 627

• • •  
TAC-TEST-70A-057F  
FOAMED-IN-PLACE HELMET.  
AD-902 273

•TACTICAL AIRLIFT CENTER POPE AFB N C

• • •  
TAC-TEST-67-234  
QUICK DONNING FLIGHT ROOT.  
AD-835 066

•TEXAS A AND M UNIV COLLEGE STATION  
DEPT OF INDUSTRIAL ENGINEERING

• • •  
EFFECT OF SAFETY GLOVES ON  
SIMULATED WORK TASKS.  
AD-738 981

•THIOKOL CHEMICAL CORP MARSHALL TEX  
LONGHORN DIV

• • •  
LD-17-67  
SPECIAL SAFETY STUDY. TESTING  
'NOMEX' MATERIAL AS HEAT RESISTANT  
CLOTHING FOR INDUSTRIAL  
APPLICATION.  
AD-664 122

•UNIROVAL INC WASHINGTON IND CONSUMER  
AND INDUSTRIAL PRODUCTS DIV

• • •  
FULL PRESSURE SUIT FOR SPACE  
CNEWS.  
(AMRL-TR-67-215)  
AD-839 425

0-21

UNCLASSIFIED

/ZOH08

UNI-WES

UNCLASSIFIED

•UNIROYAL INC WAYNE N J RESEARCH  
CENTER

PERSONNEL).  
(USA-NLABS-TR-72-61-CE)  
AD-748 828

• • •  
RESEARCH AND DEVELOPMENT ON A  
PASSIVELY PRESSURIZED FLIGHT  
UNIFORM.  
(AHRL-TR-69-56)  
AD-702 537

•WEBB ASSOCIATES YELLOW SPRINGS OHIO

• • •  
PROTECTION OF AIRCREWS FROM  
HIGH TEMPERATURES: USE OF A WATER-  
COOLED GARMENT FOR HEAT BALANCE  
STUDIES IN MAN.  
(AFOSR-TR-71-1982)  
AD-727 222

•WELSON AND CO INC HARTFORD CONN

• • •  
A ROCKET PROPELLANT HANDLER'S  
SUIT FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL FLUORINE.  
(AFRPL-TR-71-44)  
AD-731 556

• • •  
ROCKET PROPELLANT HANDLER'S  
SUIT.  
(AFRPL-TR-70-135)  
AD-876 932

•WESTINGHOUSE ELECTRIC CORP LIMA OHIO  
AEROSPACE ELECTRICAL DIV

• • •  
WAED-65.26E  
DEVELOPMENT OF THERMOELECTRIC  
HEATING AND VENTILATING SYSTEM.  
AD-644 917

•WESTINGHOUSE ELECTRIC CORP PITTSBURGH  
PA

• • •  
THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM.  
(USA-NLABS-TR-72-26-CE)  
AD-737 720

• • •  
VENTILATING BACKPACK FOR THE  
SUIT SYSTEM, TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
ICB PROTECTIVE SYSTEM FOR EOD

0-22  
UNCLASSIFIED /ZOMOB

UNCLASSIFIED

SUBJECT INDEX

- \*ACCELERATION TOLERANCE  
PROTECTIVE CLOTHING  
REPRINT: 0(2) PROTECTION  
AFFORDED BY STANDARD AND  
PREACCELERATION INFLATIONS OF THE  
BLADDER AND CAPSTAN TYPE G-SUITS.  
AD-761 779
- \*ACCLIMATIZATION  
ARMY PERSONNEL  
POSSIBLE RESEARCH SOLUTIONS FOR  
PROTECTING SOLDIERS IN ARCTIC  
REGIONS.  
AD-613 189
- \*ACOUSTICS  
PATHOLOGY  
RESEARCH ON ACOUSTICAL PROBLEMS  
OF THE MILITARY: A REVIEW AND  
FUTURE ASPECT.\*  
AD-680 185
- \*AEROSPACE CRAFT  
AVIATION SAFETY  
TRANSLATION OF RUSSIAN RESEARCH:  
SOVIET HIGH ALTITUDE EQUIPMENT FOR  
AIRCRAFT PROTECTION.  
AD-642 178
- \*AEROSPACE MEDICINE  
ASTRONAUTS  
X-20A FULL-PRESSURE SUIT  
QUANTITATIVE PERFORMANCE.  
AD-603 701  
FINGER DEXTERITY OF THE PRESSURE-  
SUITED SUBJECT.  
AD-603 705
- \*AIR CONDITIONING EQUIPMENT  
THERMOELECTRICITY  
THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM.\*  
AD-737 720
- \*AIR SEA RESCUES  
UNDERWATER CLOTHING  
AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCRAFTS.\*  
AD-637 153
- \*AIRCRAFT FIRES  
PROTECTIVE CLOTHING  
ANALYSIS OF THE THERMAL RESPONSE  
OF PROTECTIVE FABRICS.\*  
AD-739 525
- \*AMMONIUM COMPOUNDS  
CLEANING COMPOUNDS  
METHODS OF SANITIZING AND  
DEODORIZING RUDDERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.  
AD-609 164
- \*ANTHROPOMETRY  
MAN MACHINE SYSTEMS  
ANTHROPOLOGICAL APPLICATIONS IN  
HIGH ALTITUDE FLIGHT SYSTEMS.\*  
AD-706 888
- MILITARY PERSONNEL  
ANTHROPOMETRIC DIMENSIONS OF AIR  
FORCE PRESSURE-SUITED PERSONNEL FOR  
WORKSPACE AND DESIGN CRITERIA.\*  
AD-667 022
- NAVAL PERSONNEL  
PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.\*  
AD-729 664
- NOISE  
MANIKIN MEASUREMENTS OF THE  
NOISE ATTENUATION PROVIDED BY  
FLIGHT HELMETS.\*  
AD-676 885
- PRESSURE SUITS  
USE OF LINES OF NONEXTENSION TO  
IMPROVE MOBILITY IN FULL-PRESSURE  
SUITS.  
AD-610 51
- \*ARCTIC REGIONS  
ARMY PERSONNEL  
POSSIBLE RESEARCH SOLUTIONS FOR  
PROTECTING SOLDIERS IN ARCTIC  
REGIONS.  
AD-613 189
- \*ARMORED VEHICLES

U-1  
UNCLASSIFIED

/ZON08

UNCLASSIFIED

ARM-BEN

PROTECTIVE CLOTHING  
TROPIC SERVICE TEST OF  
FUNCTIONAL UNIFORM FOR ARMORED  
VEHICLE CREWMEN.\*  
AD-857 571

\*ARMY EQUIPMENT  
PROTECTIVE CLOTHING  
COMBAT UNIFORMS AND PROTECTIVE  
EQUIPMENT.\*  
AD-763 001

\*ARMY PERSONNEL  
ARCTIC REGIONS  
POSSIBLE RESEARCH SOLUTIONS FOR  
PROTECTING SOLDIERS IN ARCTIC  
REGIONS.  
AD-613 189

EXPOSURE SUITS  
SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE CREWMEN  
(WINTER).\*  
AD-856 632

PROTECTIVE CLOTHING  
STORAGE OF CHEMICAL AGENT (I).  
SPECIAL CLOTHING FOR WORKING IN  
WAREHOUSES (II)--TRANSLATION.  
AD-841 293  
TROPIC SERVICE TEST OF  
FUNCTIONAL UNIFORM FOR ARMORED  
VEHICLE CREWMEN.\*  
AD-857 571

\*ASTRONAUTS  
AUDITORY PERCEPTION  
ACOUSTICAL EVALUATION OF X-20A  
DYNA-SOAR FULL-PRESSURE SUIT  
ASSEMBLIES.  
AD-618 715

POSITIONING REACTIONS  
COMPARISON OF THREE FULL-  
PRESSURE SUITS IN TERMS OF  
ACTIVATION TIME FOR OPERATOR TO  
INITIATE CONTROLS.  
AD-613 597

PRESSURE SUITS  
MOMENTS OF INERTIA AND CENTERS

OF GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 863

A STUDY OF TECHNIQUES AND  
EQUIPMENT FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE  
GARMENTS.\*  
AD-635 206

PROTECTIVE CLOTHING  
THE OUTFITTING OF THE PILOT AND  
THE COSMONAUT--TRANSLATION.  
AD-682 156

SPACEBORNE  
INTEGRATED BACK-PACK MANEUVERING  
UNIT PROPULSION STUDY AND EXHAUST  
PLUME HEATING ANALYSIS.  
AD-609 206

\*ATROPINE  
THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.\*  
AD-770 378

\*AVIATION FUELS  
FIRES  
FIRE FIGHTER'S EXPOSURE STUDY.\*  
AD-722 774

\*AVIATION PERSONNEL  
COOLING + VENTILATING EQUIPMENT  
REPRINT: VORTEX TUBE AS A  
THERMAL PROTECTIVE DEVICE.  
AD-705 455

FLIGHT CLOTHING  
VENTILATED FLIGHT SUIT.\*  
AD-644 611

\*AVIATION SAFETY  
FIRE PROTECTIVE CLOTHING  
THERMAL PROTECTION CAPACITY OF  
THE A/P22S-4 HIGH ALTITUDE FLYING  
OUTFIT.\*  
AD-885 575

\*BENZIMIDAZOLES  
FIRE RESISTANT TEXTILES  
DEVELOPMENT OF PBI FABRIC FOR

D-2  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

BIO-CHE

FLIGHT SUIT WEAR TEST.\*  
AD-914 019

\*BIOLOGICAL WARFARE AGENTS  
PROTECTIVE CLOTHING  
PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-682 730

\*BLACKOUT (PHYSIOLOGY)  
PRESSURE SUITS  
TEST AND EVALUATION OF U. S. AIR  
FORCE EXPERIMENTAL CUTAWAY TYPE  
ANTI-BLACKOUT SUITS DESIGNATED MA-  
1.  
AD-622 047

\*BODY TEMPERATURE  
THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.\*  
AD-770 378

PROTECTIVE CLOTHING  
REPRINT: CURRENT CONCEPTS AND  
PRACTICES APPLICABLE TO THE CONTROL  
OF BODY HEAT LOSS IN AIRCREW  
SUBJECTED TO WATER IMMERSION.  
AD-636 052

PROTECTIVE COVERINGS  
TIMED HEAT-RELEASE CHEMICAL  
SYSTEM FOR UNDERWATER APPLICATIONS;  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.\*  
AD-647 892

\*BOMBS  
DISPOSAL  
PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-682 730

\*BREATHING APPARATUS  
FIRE PROTECTIVE CLOTHING  
A PROTECTIVE PASSENGER SMOKE  
HOOD.\*  
AD-657 436

PRESSURE SUITS  
AN AUTOMATIC ANALOG BREATHING  
SYSTEM FOR MULTICELL PRESSURE  
SUITS.\*  
AD-687 436

UNDERWATER CLOTHING  
DIVER EQUIPMENT TESTS PERFORMED  
DURING THE JOINT U. S. NAVY/DUKE  
UNIVERSITY 1000 FOOT SATURATION  
DIVE.\*  
AD-692 423

\*BREATHING MASKS  
UNDERWATER CLOTHING  
SECOND SERIES U.S. RUBBER  
COMPANY LIGHTWEIGHT DIVING OUTFITS  
WITH AIRLINE AND DEMAND SUPPLY.\*  
AD-893 971

\*CAMOUFLAGE  
FLIGHT CLOTHING  
CAMOUFLAGE PRINTING OF NOMEX  
SUMMER FLYING COVERALLS.\*  
AD-641 247

PROTECTIVE CLOTHING  
MODERN COUNTER-SURVEILLANCE IN  
COMBAT CLOTHING.\*  
AD-713 573

\*CENTER OF GRAVITY  
ASTRONAUTS  
MOMENTS OF INERTIA AND CENTERS  
OF GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 863

\*CHEMICAL WARFARE AGENTS  
COVERALL, CW PROTECTIVE:  
STORAGE AND PACKAGING.\*  
AD-781 520

DECONTAMINATION  
RESEARCH AND FEASIBILITY STUDIES  
ON CLOTHING AND DECONTAMINATION.\*  
AD-876 647

PROTECTIVE CLOTHING  
IMPREGNATION PLANT IMPROVEMENT  
TESTS.\*

D-3  
UNCLASSIFIED

/ZOM08

CLE-DIV

UNCLASSIFIED

AD-723 549

CLOTHING AND EQUIPMENT;  
INDIVIDUAL, PROTECTIVE, CB.\*  
AD-752 128

STORAGE

STORAGE OF CHEMICAL AGENT (I).  
SPECIAL CLOTHING FOR WORKING IN  
WAREHOUSES (II)--TRANSLATION.  
AD-841 293

TECHNICIANS

PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-682 730

\*CLEANING COMPOUNDS

TEXTILES

METHODS OF SANITIZING AND  
DEODORIZING RUBBERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.  
AD-609 164

\*CLOTHING

ACCEPTABILITY

ENGINEERING TEST OF CLOTHING  
SYSTEM (SUMMER UNIFORM) FOR ARMY  
AVIATION CREW MEMBERS.\*  
AD-850 180

ARMY EQUIPMENT

SLEEPING PROTECTION FOR WARM AND  
COOL ENVIRONMENTS; THE EFFECT OF  
UTILIZING AN ATTACHABLE PONCHO  
LINER.\*  
AD-701 874

\*COMPOSITE MATERIALS

TEXTILES

DEVELOPMENT OF A LIGHTWEIGHT  
BUTYL-COATED STRETCH FABRIC.\*  
AD-677 118

\*COOLING

HUMANS

A COOLING HOOD IN HOT-HUMID  
ENVIRONMENTS.\*  
AD-684 582

SYMPOSIA

PROCEEDINGS OF THE SYMPOSIUM ON  
INDIVIDUAL COOLING, MARCH 17-18,  
1969.\*  
AD-694 130

\*COOLING + VENTILATING EQUIPMENT

BODY ARMOR

DEVELOPMENT OF A PERSONAL  
COOLING SYSTEM FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-702 245

DESIGN

VENTILATING BACKPACK FOR THE  
SUIT SYSTEM, TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
(CB PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).\*

AD-748 838

EXPOSURE SUITS

DEVELOPMENT OF THERMOELECTRIC  
HEATING AND VENTILATING SYSTEM.\*  
AD-644 917

\*DAMAGE CONTROL

PROTECTIVE CLOTHING

REACTIVITY OF VARIOUS DAMAGE  
CONTROL PROTECTIVE CLOTHING  
MATERIALS WITH CHLORINE  
TRIFLUORIDE.\*  
AD-646 062

\*DECONTAMINATION

CHEMICAL WARFARE AGENTS

RESEARCH AND FEASIBILITY STUDIES  
ON CLOTHING AND DECONTAMINATION.\*  
AD-876 647

\*DIET

AEROSPACE MEDICINE

BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS.  
AD-626 619

\*DIVER EQUIPMENT

EVALUATION OF MODIFIED DIVERS'  
DRESS.\*

D-4

UNCLASSIFIED

/ZGM08

UNCLASSIFIED

DIV-EXP

AD-777 740

**\*DIVING**

**DEEP SUBMERGENCE**

THEORETICAL THERMAL REQUIREMENTS  
FOR THE MARK II DIVING SYSTEM.\*  
AD-694 013

**LIFE SUPPORT**

DIVER EQUIPMENT TESTS PERFORMED  
DURING THE JOINT U. S. NAVY/DUKE  
UNIVERSITY 1000 FOOT SATURATION  
DIVE.\*

AD-692 423

AD HOC COMMITTEE REPORT.\*

AD-699 170

**NAVAL PERSONNEL**

PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.\*  
AD-729 664

**PROTECTIVE CLOTHING**

PHYSIOLOGICAL EVALUATION OF A  
FREE-FLOODING DIVER HEAT  
REPLACEMENT GARMENT.\*

AD-684 479

A REVIEW OF AVAILABLE HEATED WET-  
SUIT PROTECTION FOR DIVERS AND  
SWIMMERS.\*  
AD-768 313

**\*EAR**

**SAFETY DEVICES**

SOUND ATTENUATION  
CHARACTERISTICS OF THE PROJECT  
MERCURY PRE-PRODUCTION FULL  
PRESSURE SUIT HELMET.  
AD-622 197

**\*EAR PROTECTORS**

**NAVAL AVIATION**

A TECHNIQUE FOR OPTIMAL FITTING  
OF FLIGHT HELMETS.\*  
AD-718 327

**\*ELASTOMERS**

**FIRE RESISTANT MATERIALS**

DEVELOPMENT OF REFLECTIVE  
MATERIALS FOR FIRE FIGHTER'S  
BOOTS.\*

AD-762 544

**\*EXHAUST VALVES**

**HELMETS**

EVALUATION OF IMPROVED  
EXHALATION VALVE FOR HGU-8/P FLYING  
HELMET.\*  
AD-633 952

**\*EXPANDED PLASTICS**

**HELMETS**

FOAMED-IN-PLACE HELMET.\*  
AD-902 273

**PROTECTIVE CLOTHING**

REPRINT: MOISTURE TRANSFER  
THROUGH IMPERMEABLE FOAM  
INSULATIONS.  
AD-665 042

**\*EXPOSURE SUITS**

**ACCEPTABILITY**

EVALUATION OF ONE PIECE WET  
SUIT.\*  
AD-669 230

**ASTRONAUTS**

TRANSLATION OF RUSSIAN RESEARCH:  
USES OF SPACE CLOTHING FOR  
ASTRONAUTS.  
AD-620 099

**COLD WEATHER TESTS**

SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE CREWMEN  
(WINTER).\*

AD-856 632

**COMPATIBILITY**

HUMAN FACTORS STUDY OF GMC  
CLOTHING AND EQUIPMENT DURING COLD  
WEATHER TESTS OF THE SERGEANT  
MISSILE SYSTEM, II.\*

AD-701 864

HUMAN FACTORS STUDY OF GMC  
CLOTHING AND EQUIPMENT DURING COLD  
WEATHER TESTS OF THE PERSHING  
MISSILE SYSTEM.\*

AD-701 872

**COOLING + VENTILATING EQUIPMENT**

D-5

UNCLASSIFIED

/ZOM08



UNCLASSIFIED

EXT-FIR

DEVELOPMENT OF THERMOELECTRIC  
HEATING AND VENTILATING SYSTEM.\*  
AD-644 917

EFFICIENCY  
PHYSIOLOGICAL EVALUATION OF A  
COMMERCIALY AVAILABLE ABANDON-SHIP  
SURVIVAL SUIT.\*  
AD-734 136

EXTRAVEHICULAR ACTIVITY  
RESEARCH TO ADVANCE  
EXTRAVEHICULAR PROTECTIVE  
TECHNOLOGY.\*  
AD-818 964

HEAT TRANSFER  
EVALUATION OF HEAT LOSS FROM  
NAVY DIVERS' WET SUIT.\*  
AD-747 276

POLYVINYL CHLORIDE  
THERMAL EVALUATION OF A  
POLYVINYLCHLORIDE EXPOSURE SUIT  
(EMPRESS) AND COMPARISON WITH  
PRESENT SUBMARINE DECK EXPOSURE  
SUIT.\*  
AD-678 375

PRESSURE SUITS  
X-20A FULL-PRESSURE SUIT  
QUANTITATIVE PERFORMANCE.  
AD-603 701

SURVIVAL (PERSONNEL)  
VENTILE ANTI-EXPOSURE SUIT.\*  
AD-838 627

UNDERWATER  
EVALUATION OF SWIMMER EXPOSURE  
SUITS IN SUBFREEZING WATERS.\*  
AD-886 843

\*EXTRAVEHICULAR ACTIVITY  
EXPOSURE SUITS  
RESEARCH TO ADVANCE  
EXTRAVEHICULAR PROTECTIVE  
TECHNOLOGY.\*  
AD-818 964

PRESSURE SUITS

RESEARCH AND DEVELOPMENT OF  
EXTRAVEHICULAR PROTECTIVE  
ASSEMBLY.\*  
AD-647 197

TECHNIQUES AND MATERIALS FOR  
PASSIVE THERMAL CONTROL OF RIGID  
AND FLEXIBLE EXTRAVEHICULAR SPACE  
ENCLOSURES.\*  
AD-666 940

SURVEY OF THERMAL CONTROL  
TECHNIQUES FOR EXTRAVEHICULAR SPACE  
SUITS.\*  
AD-687 149

METEOROID THREAT TO  
EXTRAVEHICULAR SPACE SUIT  
ASSEMBLIES.\*  
AD-691 461

OPERATIONAL CHARACTERISTICS OF  
THE 1964 EXTRAVEHICULAR RESEARCH  
MODEL FULL PRESSURE ASSEMBLY.\*  
AD-819 324

PROTECTIVE CLOTHING  
INTEGRATED MANEUVERING LIFE  
SUPPORT SYSTEM.\*  
AD-714 577

\*FABRICS  
FABRIC-PROTECTORS--TRANSLATION.  
AD-781 309

\*FASTENINGS  
PRESSURE SUITS  
PRESSURE SEALING CLOSURES FOR  
FULL PRESSURE PROTECTIVE SUIT  
ASSEMBLIES.\*  
AD-658 204

\*FEET  
PROTECTIVE CLOTHING  
FOOTWEAR FOR INUNDATED AREAS.\*  
AD-766 684

\*FIRE FIGHTING  
PHYSIOLOGICAL EFFECTS OF WEARING  
THE FIRE PROXIMITY SUIT ON CRASH  
TRUCK ALERT STATUS TO HOT-DRY AND  
HOT-HUMID ENVIRONMENTS.\*  
AD-773 828

\*FIRE PROTECTIVE CLOTHING

D-6  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

FIR-FIR

FLAME-RETARDANT CLOTHING AND  
TEXTILE ITEMS FOR USE IN OXYGEN-  
ENRICHED ENVIRONMENTS OF  
DECOMPRESSION CHAMBERS.\*  
AD-779 886

ARMORED VEHICLES  
SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE CREWMEN  
(SUMMER).\*  
AD-856 281  
ENGINEERING TEST OF FUNCTIONAL  
SUMMER UNIFORM FOR ARMORED VEHICLE  
CREWMEN.\*  
AD-856 438

AVIATION SAFETY  
THERMAL PROTECTION CAPACITY OF  
THE A/P225-4 HIGH ALTITUDE FLYING  
OUTFIT.\*  
AD-885 575

BREATHING APPARATUS  
A PROTECTIVE PASSENGER SMOKE  
HOOD.\*  
AD-657 436

CLOSED ECOLOGICAL SYSTEMS  
FLAME PROTECTION AFFORDED MICE  
BY A NONCOMBUSTIBLE GARMENT IN 100%  
OXYGEN ATMOSPHERES.\*  
AD-665 833

DESIGN  
FIRE FIGHTER'S EXPOSURE STUDY.\*  
AD-722 774

EFFICIENCY  
PROTECTIVE SMOKE HOOD STUDIES.\*  
AD-727 021

FLIGHT CLOTHING  
EVALUATION OF CREW MEMBER'S  
IMPROVED FIRE RESISTANT FLIGHT  
COVERALLS.\*  
AD-814 366

HEAT RESISTANT PLASTICS  
EVALUATION OF FIRE RETARDANT  
FABRICS.\*  
AD-784 935

PERFORMANCE (ENGINEERING)  
SPECIAL SAFETY STUDY. TESTING  
'NOMEX' MATERIAL AS HEAT RESISTANT  
CLOTHING FOR INDUSTRIAL  
APPLICATION.\*  
AD-664 122

TEST FACILITIES  
THE TESTING OF THERMAL  
PROTECTIVE CLOTHING IN A  
REPRODUCIBLE FUEL FIRE ENVIRONMENT.  
A FEASIBILITY STUDY.\*  
AD-729 362

THERMAL INSULATION  
DESIGN OF WOVEN AND LAMINATED  
FABRICS FOR TESTING OF THERMAL  
RESISTANCE.\*  
AD-638 560

\*FIRE RESISTANT TEXTILES  
BENZIMIDAZOLES  
DEVELOPMENT OF PBI FABRIC FOR  
FLIGHT SUIT WEAR TEST.\*  
AD-914 019

FLIGHT CLOTHING  
FLEET EVALUATION - COVERALLS,  
FLYING, SUMMER, FIRE RESISTANT,  
POLYAMIDE, TYPE CS-FRP-1.\*  
AD-667 718  
NONFLAMMABLE PBI FABRICS FOR  
PROTOTYPE AIR FORCE FLIGHT SUITS.\*  
AD-880 047

GLOVES  
EVALUATION OF FIRE RETARDANT  
FLIGHT GLOVES (NOMEX). (ACA-  
63/671).\*  
AD-826 388

NYLON  
SPECIAL SAFETY STUDY. TESTING  
'NOMEX' MATERIAL AS HEAT RESISTANT  
CLOTHING FOR INDUSTRIAL  
APPLICATION.\*  
AD-664 122

SHRINKAGE  
LABORATORY SHRINKAGE EVALUATION  
OF NOMEX SUMMER FLIGHT SUITS.\*

D-7  
UNCLASSIFIED

/20M08

UNCLASSIFIED

FIR-FLI

AD-657 853

**\*FIRE SAFETY  
TEXTILES**

ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.\*  
AD-732 429

**\*FLIGHT CLOTHING  
ACCEPTABILITY**

FLEET EVALUATION - COVERALLS,  
FLYING, SUMMER, FIRE RESISTANT,  
POLYAMIDE, TYPE CS-FRP-1.\*  
AD-667 718

**BENZIMIDAZOLES**

DEVELOPMENT OF PBI FABRIC FOR  
FLIGHT SUIT WEAR TEST.\*  
AD-914 019

**CAMOUFLAGE**

CAMOUFLAGE PRINTING OF NOMEX  
SUMMER FLYING COVERALLS.\*  
AD-641 247

**CLEANING**

METHODS OF SANITIZING AND  
DEODORIZING RUBBERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.  
AD-609 164

**COOLING**

DESCRIPTION AND EVALUATION OF A  
PORTABLE DRY-ICE WATER-CONDITIONED  
SUIT SYSTEM FOR AIRCREWMEMBERS.\*  
AD-700 915

**DESIGN**

A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING.\*  
AD-722 857

**ENVIRONMENTAL TESTS**

ENGINEERING TEST OF CLOTHING  
SYSTEM (SUMMER UNIFORM) FOR ARMY  
AVIATION CREW MEMBERS.\*  
AD-850 180

**FIRE PROTECTIVE CLOTHING**

EVALUATION OF CREW MEMBER'S  
IMPROVED FIRE RESISTANT FLIGHT  
COVERALLS.\*  
AD-814 366

**FIRE RESISTANT MATERIALS**

DEVELOPMENT OF THERMALLY DURABLE  
COATED FABRICS FOR USE IN FLIGHT  
GLOVES.\*  
AD-737 099

**FIRE RESISTANT TEXTILES**

NONFLAMMABLE PBI FABRICS FOR  
PROTOTYPE AIR FORCE FLIGHT SUITS.\*  
AD-880 047

**FLIGHT CREWS**

ADVANCES IN THE DEVELOPMENT OF  
HEAD PROTECTION FOR AIRCRAFT  
CREWMEN.\*  
AD-665 388

**GLOVES**

DEVELOPMENT OF REVISED SIMPLEX  
FABRIC FOR SUMMER FLYING GLOVES.\*  
AD-636 423  
EVALUATION OF FIRE RETARDANT  
FLIGHT GLOVES(NOMEX). (ACA-  
63/671).\*  
AD-826 388

**HEAT RESISTANT MATERIALS**

THE BEHAVIOR OF PROTECTIVE  
UNIFORMS IN LARGE-SCALE SIMULATED  
FIRES.\*  
AD-724 648

**HIGH ALTITUDE**

COMPARATIVE EVALUATION OF USAF  
STANDARD A/P22S-2 AND IMPROVED  
A/P22S-2A HIGH ALTITUDE, FULL-  
PRESSURE FLYING OUTFITS.  
AD-467 823

TRANSLATION OF RUSSIAN RESEARCH:  
SOVIET HIGH ALTITUDE EQUIPMENT FOR  
AIRCREW PROTECTION.  
AD-642 178

**HUMAN FACTORS ENGINEERING**

ANTHROPOLOGICAL APPLICATIONS IN

D-8  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

FLI-FLI

HIGH ALTITUDE FLIGHT SYSTEMS.\*  
AD-706 888

PERFORMANCE (ENGINEERING)  
WINDBLAST TEST OF HIGH-ALTITUDE  
FLYING OUTFIT A/P225-4.\*  
AD-877 249

PILOTS  
THE OUTFITTING OF THE PILOT AND  
THE COSMONAUT--TRANSLATION.  
AD-682 156

PRESSURE SUITS  
SURVIVAL CAPABILITIES OF AF  
PILOTS WEARING FULL PRESSURE HIGH  
ALTITUDE FLYING OUTFITS.  
AD-462 767

REVIEWS  
AEROSPACE LIFE SUPPORT SYSTEMS  
AND CREW PROTECTIVE EQUIPMENT.\*  
AD-668 840

SHOES  
QUICK DONNING FLIGHT BOOT.\*  
AD-835 066

SHRINKAGE  
LABORATORY SHRINKAGE EVALUATION  
OF NOMEX SUMMER FLIGHT SUITS.\*  
AD-657 853

SPACE NAVIGATION  
INTEGRATED BACK-PACK MANEUVERING  
UNIT PROPULSION STUDY AND EXHAUST  
PLUME HEATING ANALYSIS.  
AD-609 206

TEMPERATURE CONTROL  
AUTOMATIC TEMPERATURE CONTROL  
FOR LIQUID-COOLED FLIGHT SUITS.\*  
AD-655 834

TEST METHODS  
CLOTHING (AVIATION).\*  
AD-719 106  
CLOTHING (AVIATION).\*  
AD-723 030

TESTS

HEIGHT-WEIGHT SIZING OF  
PROTECTIVE GARMENTS, BASED ON  
JAPANESE AIR SELF-DEFENSE FORCE  
PILOT DATA, WITH FIT-TEST RESULTS.  
AD-606 039

THERMAL INSULATION  
DEVELOPMENT OF PRACTICAL HIGH-  
INTENSITY THERMAL PROTECTION  
SYSTEMS.\*  
AD-709 570  
THERMAL PROTECTION CAPACITY OF  
THE A/P225-4 HIGH ALTITUDE FLYING  
OUTFIT.\*  
AD-885 575

TROPICAL REGIONS  
VENTILATED FLIGHT SUIT.\*  
AD-644 611

UNDERWEAR  
ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.\*  
AD-732 429

VENTILATION  
REPRINT: EFFICACY OF  
VENTILATING SYSTEMS.  
AD-726 076

WARNING SYSTEMS  
CENTRIFUGE VALIDATION OF A  
TACTILE 'G-LIMIT' WARNING DEVICE.\*  
AD-732 194

\*FLIGHT CREWS  
COOLING  
AIRCREW COOLING STUDY.\*  
AD-668 139

EXPOSURE SUITS  
VENTILE ANTI-EXPOSURE SUIT.\*  
AD-838 627

PROTECTIVE CLOTHING  
USER EVALUATIONS OF TWO AIRCREW  
PROTECTIVE HELMETS.\*  
AD-674 184

D-9

UNCLASSIFIED

/ZOMUS

UNCLASSIFIED

FLU-HEA

**SURVIVAL (PERSONNEL)**

AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCREWS.\*  
AD-677 153

**\*FLUORINE**

**PROTECTIVE CLOTHING**

A ROCKET PROPELLANT HANDLER'S  
SUIT FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL  
FLUORINE.\*  
AD-731 556

**\*FOAM RUBBER**

**PROTECTIVE CLOTHING**

RESEARCH ON CLOSED-CELL SPONGE  
AS A PRESSURE TECHNIQUE FOR  
PROTECTIVE ASSEMBLIES.\*  
AD-652 653

**\*FRAGMENTATION AMMUNITION**

**DISPOSAL**

DEVELOPMENT OF A PERSONAL  
COOLING SYSTEM FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-702 245

**\*FROSTBITE**

**COLD WEATHER TESTS**

RESPIRATORY AND MICROCLIMATE  
TEMPERATURES WITHIN THE PARKA HOOD  
IN EXTREME COLD.  
AD-608 139

**\*GAS SEALS**

**PRESSURE SUITS**

PRESSURE SEALING CLOSURES FOR  
FULL PRESSURE PROTECTIVE SUIT  
ASSEMBLIES.\*  
AD-658 204

**\*GASPROOF CLOTHING**

**SURFACE PROPERTIES**

RESEARCH AND FEASIBILITY STUDIES  
ON CLOTHING AND DECONTAMINATION.\*  
AD-676 647

**\*GLOVES**

**FIRE RESISTANT TEXTILES**

**EVALUATION OF FIRE RETARDANT**

FLIGHT GLOVES(NOMEX). (ACA-  
63/671).\*  
AD-826 368

**FLIGHT CLOTHING**

DEVELOPMENT OF REVISED SIMPLEX  
FABRIC FOR SUMMER FLYING GLOVES.\*  
AD-636 423

**PERFORMANCE (HUMAN)**

CLEARANCE AND PERFORMANCE VALUES  
FOR THE BARE-HANDED AND THE  
PRESSURE-GLOVED OPERATOR.\*  
AD-681 457

**PRESSURE SUITS**

FINGER DEXTERITY OF THE PRESSURE-  
SUITED SUBJECT.  
AD-603 705

**SELECTION**

EFFECT OF SAFETY GLOVES ON  
SIMULATED WORK TASKS.\*  
AD-738 981

**THERMAL INSULATION**

EFFECTS OF VARIOUS GASES ON  
HANDGEAR INSULATION.  
AD-628 367

**THERMAL STABILITY**

DEVELOPMENT OF THERMALLY DURABLE  
COATED FABRICS FOR USE IN FLIGHT  
GLOVES.\*  
AD-737 099

**\*GUNNERS**

**UH-1 DOOR GUNNER PROTECTION.\***

AD-782 112

**\*HEAD (ANATOMY)**

**PROTECTION**

INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.\*  
AD-702 124

**\*HEADGEAR**

**FLIGHT CLOTHING**

**ENGINEERING TEST OF PROTECTIVE**

D-10

UNCLASSIFIED

/ZOM00

UNCLASSIFIED

HEA-HEA

HELMET SPH-4.\*  
AD-862 006

JUNGLES  
ENGINEERING TEST OF JUNGLE MAT  
WITH HEADNET.\*  
AD-835 403

\*HEAT EXCHANGERS  
WETTING  
CONDENSATE WETTING OF SUIT HEAT  
EXCHANGER WATER SEPARATOR PLATES.\*  
AD-856 391

\*HEAT OF SOLUTION  
SURFACE ACTIVE SUBSTANCES  
TIMED HEAT-RELEASE CHEMICAL  
SYSTEM FOR UNDERWATER APPLICATIONS;  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.\*  
AD-647 892

\*HEAT RESISTANT MATERIALS  
FLIGHT CLOTHING  
THE BEHAVIOR OF PROTECTIVE  
UNIFORMS IN LARGE-SCALE SIMULATED  
FIRES.\*  
AD-724 648

PROTECTIVE CLOTHING  
DEVELOPMENT OF HIGH-INTENSITY  
THERMAL PROTECTIVE FABRIC.\*  
AD-659 974  
ASSESSMENT OF THE THERMAL  
RESISTANCE OF CLOTHING--  
TRANSLATION.  
AD-750 830

\*HEAT RESISTANT PLASTICS  
FINE PROTECTIVE CLOTHING  
EVALUATION OF FIRE RETARDANT  
FABRICS.\*  
AD-754 935

SYNTHETIC FIBERS  
NONFLAMMABLE PBI FABRICS FOR  
PROTOTYPE AIR FORCE FLIGHT SUITS.\*  
AD-880 047

\*HEAT TOLERANCE  
PRESSURE SUITS

PHYSIOLOGICAL EFFECTS OF  
DIFFERENT OXYGEN FLOW RATES AND  
AMBIENT TEMPERATURES ON PRESSURE-  
SUITED SUBJECTS PERFORMING WORK AT  
ALTITUDE.\*  
AD-663 907

PROTECTIVE CLOTHING  
PHYSIOLOGICAL EVALUATION OF  
EFFECTS ON PERSONNEL WEARING THE  
MICROWAVE PROTECTIVE SUIT AND  
OVERGARMENT.\*  
AD-690 890

\*HEATERS  
EXPOSURE SUITS  
DEVELOPMENT OF THERMOELECTRIC  
HEATING AND VENTILATING SYSTEM.\*  
AD-644 917

PROTECTIVE CLOTHING  
INVESTIGATION OF THE PERFORMANCE  
OF AN OPEN-FLAME CONVECTOR.\*  
AD-636 398

RADIOACTIVE ISOTOPES  
EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.\*  
AD-705 064

UNDERWATER CLOTHING  
DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.\*  
AD-727 606

\*HEATING  
PROTECTIVE COVERINGS  
TIMED HEAT-RELEASE CHEMICAL  
SYSTEM FOR UNDERWATER APPLICATIONS;  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.\*  
AD-647 892

\*HEATING ELEMENTS  
PROTECTIVE CLOTHING  
THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM.\*  
AD-737 720

UNDERWATER CLOTHING

D-11  
UNCLASSIFIED

/ZOM08

HEL-LAM

UNCLASSIFIED

SEALAB III - DIVER'S ISOTOPIC  
SWIMSUIT-HEATER SYSTEM.\*  
AD-708 680

\*HELMETS  
COMPATIBILITY  
A TECHNIQUE FOR OPTIMAL FITTING  
OF FLIGHT HELMETS.\*  
AD-718 327

COOLING  
REPRINT: WATER COOLED HOOD  
AFFECTS CREATIVE PRODUCTIVITY.  
AD-724 020

EXPANDED PLASTICS  
FOAMED-IN-PLACE HELMET.\*  
AD-902 273

FLIGHT CLOTHING  
EVALUATION OF IMPROVED  
EXHALATION VALVE FOR HGU-8/P FLYING  
HELMET.\*  
AD-633 952  
INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.\*  
AD-702 124

JOINTS  
EXPLORATORY DEVELOPMENT OF  
PARTIAL PRESSURE HELMET AND  
MOBILITY JOINTS FOR EMERGENCY  
PRESSURE SUIT OUTFITS.\*  
AD-720 275

LIFE SUPPORT  
EFFECTIVE LIFE SUPPORT HELMETS.\*  
AD-636 044

PERFORMANCE (ENGINEERING)  
ADVANCES IN THE DEVELOPMENT OF  
HEAD PROTECTION FOR AIRCRAFT  
CREWMEN.\*  
AD-665 388  
USER EVALUATIONS OF TWO AIRCREW  
PROTECTIVE HELMETS.\*  
AD-674 184  
ENGINEERING TEST OF PROTECTIVE  
HELMET SPH-4.\*  
AD-652 006

PRESSURE SUITS  
SOUND ATTENUATION  
CHARACTERISTICS OF THE PROJECT  
MERCURY PRE-PRODUCTION FULL  
PRESSURE SUIT HELMET.  
AD-622 197

\*HILSCH TUBES  
FLIGHT CLOTHING  
REPRINT: VORTEX TUBE AS A  
THERMAL PROTECTIVE DEVICE.  
AD-705 455

PROTECTIVE CLOTHING  
APPLICATION OF THE RANGUE-HILSCH  
VORTEX TUBE TO AIRCREW COOLING  
PROBLEMS.\*  
AD-673 345

\*HUMAN FACTORS ENGINEERING  
FLIGHT CLOTHING  
ANTHROPOLOGICAL APPLICATIONS IN  
HIGH ALTITUDE FLIGHT SYSTEMS.\*  
AD-706 888

\*ISOCYANATE PLASTICS  
SHOES  
DEVELOPMENT OF LIGHTWEIGHT (COLD-  
WET) INSULATED FOOTWEAR.\*  
AD-766 690

\*JET ENGINE FUELS  
FIRES  
FIRE FIGHTER'S EXPOSURE STUDY.\*  
AD-722 774

\*JET FIGHTERS  
GRAVITY  
CENTRIFUGE VALIDATION OF A  
TACTILE 'G-LIMIT' WARNING DEVICE.\*  
AD-732 194

\*JOINTS  
PRESSURE SUITS  
EXPLORATORY DEVELOPMENT OF  
PARTIAL PRESSURE HELMET AND  
MOBILITY JOINTS FOR EMERGENCY  
PRESSURE SUIT OUTFITS.\*  
AD-720 275

\*LAMINATES

D-12  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

LAN-MIL

TEXTILES  
DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.\*  
AD-755 457

\*LAND MINES  
COUNTERMEASURES  
DEVELOPMENT, FABRICATION AND  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTIPERSONNEL  
MINES USING A SUPPLEMENTARY  
DEVICE.\*  
AD-813 883

\*LIFE SUPPORT  
DIVING  
AD HOC COMMITTEE REPORT.\*  
AD-699 170

HELMETS  
EFFECTIVE LIFE SUPPORT HELMETS.\*  
AD-636 044

PRESSURE SUITS  
ENGINEERING DESIGN STUDY OF A  
SPACE SUIT WITH AN INTEGRATED  
ENVIRONMENTAL CONTROL SYSTEM.\*  
AD-680 826

PROTECTIVE CLOTHING  
PROGRESS REPORT ON THE DAMAGE  
CONTROL SUIT SYSTEM.\*  
AD-726 698  
DAMAGE CONTROL SUIT SYSTEM.\*  
AD-762 428

RESPIRATION  
EMERGENCY BREATHING AND SUIT  
DECONTAMINATION SYSTEM.  
AD-700 1138

REVIEWS  
AEROSPACE LIFE SUPPORT SYSTEMS  
AND CREW PROTECTIVE EQUIPMENT.\*  
AD-668 840

\*LIQUID ROCKET OXIDIZERS  
PROTECTIVE CLOTHING  
A ROCKET PROPELLANT HANDLER'S  
SUIT FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL

FLUORINE.\*  
AD-731 556

\*LUNAR ENVIRONMENT  
PERFORMANCE(HUMAN)  
MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS.  
AD-626 979

\*MANNED SPACECRAFT  
HEAT EXCHANGERS  
CONDENSATE WETTING OF SUIT HEAT  
EXCHANGER WATER SEPARATOR PLATES.\*  
AD-856 891

PRESSURE SUITS  
REVERSE PRESSURE EFFECT ON SUIT  
DEMAND REGULATOR.\*  
AD-856 673

WEIGHTLESSNESS  
MOL ZERO G DEVELOPMENT TEST  
REPORT. DD FORM 1423 DATA ITEM UY-  
(110).\*  
AD-856 542

\*METABOLISM  
AEROSPACE MEDICINE  
METABOLIC MECHANISMS OF MAN IN  
THE FULL PRESSURE SUIT.  
PHYSIOLOGICAL COST OF DONNING A  
FULL PRESSURE SUIT.  
AD-609 937

\*MICROWAVES  
PROTECTIVE CLOTHING  
PHYSIOLOGICAL EVALUATION OF  
EFFECTS ON PERSONNEL WEARING THE  
MICROWAVE PROTECTIVE SUIT AND  
OVERGARMENT.\*  
AD-690 890

\*MILITARY PERSONNEL  
PROTECTIVE CLOTHING  
VENTILATING BACKPACK FOR THE  
SUIT SYSTEM; TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
(CB PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).\*  
AD-748 838

D-13  
UNCLASSIFIED

/ZOM08



UNCLASSIFIED

MOT-PRE

\*MOTOR REACTIONS  
HANDS  
FINGER DEXTERITY OF THE PRESSURE-  
SUITED SUBJECT.  
AD-603 705

\*NAVAL OPERATIONS  
UNDERWATER  
NAVAL APPLICATIONS OF MAN-IN-THE-  
SEA CONCEPTS - MISSION DEFINITION.\*  
AD-863 709

\*NOISE  
ATTENUATION  
A TECHNIQUE FOR OPTIMAL FITTING  
OF FLIGHT HELMETS.\*  
AD-718 327

\*NYLON  
FIRE RESISTANT TEXTILES  
SPECIAL SAFETY STUDY. TESTING  
'NOMEX' MATERIAL AS HEAT RESISTANT  
CLOTHING FOR INDUSTRIAL  
APPLICATION.\*  
AD-664 122

\*OXYGEN  
SENSORS  
DEVELOPMENT AND EVALUATION OF AN  
OXYGEN-SENSING WARNING DEVICE.\*  
AD-735 377

\*OXYGEN EQUIPMENT  
ASTRONAUTS  
THE OUTFITTING OF THE PILOT AND  
THE COSMONAUT--TRANSLATION.  
AD-682 156

DESIGN  
AN AUTOMATIC ANALOG BREATHING  
SYSTEM FOR MULTICELL PRESSURE  
SUITS.\*  
AD-687 436

\*PERFORMANCE (HUMAN)  
PROTECTIVE CLOTHING  
REPRINT: WATER COOLED HOOD  
AFFECTS CREATIVE PRODUCTIVITY.  
AD-724 020

SPACE CREWS

STUDY OF HUMAN PERFORMANCE IN A  
MARK IV PRESSURE SUIT.  
AD-619 029

\*PIGMENTS  
REFLECTIVITY  
DEVELOPMENT OF REFLECTIVE  
MATERIALS FOR FIRE FIGHTER'S  
BOOTS.\*  
AD-762 544

\*PILOTS  
FLIGHT CLOTHING  
THE OUTFITTING OF THE PILOT AND  
THE COSMONAUT--TRANSLATION.  
AD-682 156

STRESS (PHYSIOLOGY)  
A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING.\*  
AD-722 857

\*POLYVINYL CHLORIDE  
EXPOSURE SUITS  
THERMAL EVALUATION OF A  
POLYVINYLCHLORIDE EXPOSURE SUIT  
(EMPRESS) AND COMPARISON WITH  
PRESENT SUBMARINE DECK EXPOSURE  
SUIT.\*  
AD-678 375

\*PRESSURE BREATHING  
ASTRONAUTS  
EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.  
AD-608 088

\*PRESSURE REGULATORS  
PRESSURE SUITS  
REVERSE PRESSURE EFFECT ON SUIT  
DEMAND REGULATOR.\*  
AD-687 613

\*PRESSURE SUITS  
ACCELERATION TOLERANCE  
EVALUATION OF A WET SUIT IN  
CONJUNCTION WITH ANTI-BLACKOUT  
PROTECTION.\*  
AD-658 508  
REPRINT: G(Z) PROTECTION  
AFFORDED BY STANDARD AND

D-4  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

MOT-PRE

PREACCELERATION INFLATIONS OF THE  
BLADDER AND CAPSTAN TYPE G-SUITS.  
AD-761 779

ACOUSTIC PROPERTIES  
ACOUSTICAL EVALUATION OF X-20A  
DYNA-SOAR FULL-PRESSURE SUIT  
ASSEMBLIES.  
AD-618 715

AEROSPACE MEDICINE  
BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS.  
AD-626 619

ASTRONAUTS  
MOMENTS OF INERTIA AND CENTERS  
OF GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 863

TRANSLATION OF RUSSIAN RESEARCH:  
USES OF SPACE CLOTHING FOR  
ASTRONAUTS.  
AD-620 099

A STUDY OF TECHNIQUES AND  
EQUIPMENT FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE  
GARMENTS.\*  
AD-635 206

SPACE SUITS-SPACE FASHION--  
TRANSLATION.  
AD-823 299

BREATHING APPARATUS  
AN AUTOMATIC ANALOG BREATHING  
SYSTEM FOR MULTICELL PRESSURE  
SUITS.\*  
AD-687 436

COLD WEATHER TESTS  
SURVIVAL CAPABILITIES OF AF  
PILOTS WEARING FULL PRESSURE HIGH  
ALTITUDE FLYING OUTFITS.  
AD-462 767

COOLING  
REPRINT: EFFICACY OF PRESSURE  
SUIT COOLING SYSTEMS IN HOT  
ENVIRONMENTS.

AD-627 190  
VARIABLE THERMAL CONDUCTIVITY  
HEAT TRANSFER RESEARCH FOR PERSONAL  
PROTECTIVE ASSEMBLIES.\*  
AD-688 765

DESIGN  
RESEARCH AND DEVELOPMENT OF  
EXTRAVEHICULAR PROTECTIVE  
ASSEMBLY.\*  
AD-647 197

PRELIMINARY STUDIES ON A NEW  
PARTIAL-PRESSURE SUIT CONCEPT.\*  
AD-652 207

PRINCIPLES OF THE BOYLE'S LAW  
EMERGENCY PRESSURE SUIT AND THEIR  
APPLICATION.\*  
AD-685 720

REPRINT: ZOOM BAG SCENARIO.  
AD-697 455

RESEARCH AND DEVELOPMENT ON A  
PASSIVELY PRESSURIZED FLIGHT  
UNIFORM.\*  
AD-702 537

EXPLORATORY DEVELOPMENT OF  
PRESSURE SUIT MOBILITY JOINTS,  
GLOVES AND HELMET.\*  
AD-711 676

INTEGRATED MANEUVERING LIFE  
SUPPORT SYSTEM.\*  
AD-714 577

BACKGROUND AND DEVELOPMENT OF  
BOYLE'S LAW ALTITUDE SUITS.\*  
AD-761 797

THE DESIGN REQUIREMENTS,  
DESCRIPTION AND FUNCTIONAL  
OPERATION OF THE A/P225-4 AND  
A/P225-6 HIGH ALTITUDE, FLYING  
OUTFITS.\*  
AD-885 304

EXPOSURE SUITS  
X-20A FULL-PRESSURE SUIT  
QUANTITATIVE PERFORMANCE.  
AD-603 701

EXTRAVEHICULAR ACTIVITY  
TECHNIQUES AND MATERIALS FOR  
PASSIVE THERMAL CONTROL OF RIGID  
AND FLEXIBLE EXTRAVEHICULAR SPACE  
ENCLOSURES.\*

D-15  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

MOT-PRE

AD-666 940  
OPERATIONAL CHARACTERISTICS OF  
THE 1964 EXTRAVEHICULAR RESEARCH  
MODEL FULL PRESSURE ASSEMBLY.\*  
AD-819 324

FASTENINGS  
PRESSURE SEALING CLOSURES FOR  
FULL PRESSURE PROTECTIVE SUIT  
ASSEMBLIES.\*  
AD-658 204

FLIGHT CREWS  
DESIGN AND DEVELOPMENT OF A HIGH  
ALTITUDE PROTECTIVE ASSEMBLY.\*  
AD-886 642

HEAT EXCHANGERS  
CONDENSATE WETTING OF SUIT HEAT  
EXCHANGER WATER SEPARATOR PLATES.\*  
AD-856 891

HEAT TRANSFER  
SENSIBLE HEAT TRANSFER IN THE  
GEMINI AND APOLLO PRESSURE SUITS.\*  
AD-647 828

HELMETS  
EFFECTIVE LIFE SUPPORT HELMETS.\*  
AD-636 044

HIGH ALTITUDE  
COMPARATIVE EVALUATION OF USAF  
STANDARD A/P22S-2 AND IMPROVED  
A/P22S-2A HIGH ALTITUDE, FULL-  
PRESSURE FLYING OUTFITS.  
AD-467 823

DESIGN AND FABRICATION OF A  
PASSIVELY PRESSURIZED SUIT.\*  
AD-720 827

HUMAN FACTORS ENGINEERING  
USE OF LINES OF NONEXTENSION TO  
IMPROVE MOBILITY IN FULL-PRESSURE  
SUITS.  
AD-610 519  
CLEARANCE AND PERFORMANCE VALUES  
FOR THE BARE-HANDED AND THE  
PRESSURE-GLOVED OPERATOR.\*  
AD-681 457

JOINTS  
EXPLORATORY DEVELOPMENT OF  
PARTIAL PRESSURE HELMET AND  
MOBILITY JOINTS FOR EMERGENCY  
PRESSURE SUIT OUTFITS.\*  
AD-720 275

LIFE SUPPORT  
ENGINEERING DESIGN STUDY OF A  
SPACE SUIT WITH AN INTEGRATED  
ENVIRONMENTAL CONTROL SYSTEM.\*  
AD-680 826

MANEUVERABILITY  
COMPARISON OF THREE FULL-  
PRESSURE SUITS IN TERMS OF  
ACTIVATION TIME FOR OPERATOR TO  
INITIATE CONTROLS.  
AD-613 597  
STUDY OF HUMAN PERFORMANCE IN A  
MARK IV PRESSURE SUIT.  
AD-619 029

MILITARY PERSONNEL  
ANTHROPOMETRIC DIMENSIONS OF AIR  
FORCE PRESSURE-SUITED PERSONNEL FOR  
WORKSPACE AND DESIGN CRITERIA.\*  
AD-697 022

MOBILITY  
MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS.  
AD-626 979

PERFORMANCE(HUMAN)  
A PORTABLE TEST BATTERY FOR  
COMPARATIVELY EVALUATING OPERATOR  
PERFORMANCE IN FULL-PRESSURE SUIT  
ASSEMBLIES.\*  
AD-680 825

PRESSURE REGULATORS  
REVERSE PRESSURE EFFECT ON SUIT  
DEMAND REGULATOR.\*  
AD-856 673

PROTECTIVE MASK FACEPIECES  
RESEARCH AND DEVELOPMENT OF  
HELMET FACEPIECES FOR SPACE  
PROTECTIVE ASSEMBLIES.\*

D-16  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

PRO-PRO

AD-652 248

**RESPIRATION**

EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.

AD-608 088

EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.

AD-608 088

**SPACE CREWS**

FULL PRESSURE SUIT FOR SPACE  
CREWS.\*

AD-839 425

MOL ZERO 6 DEVELOPMENT TEST  
REPORT. DO FORM 1423 DATA ITEM UT-  
(110).\*

AD-856 542

**SPACE FLIGHT**

RESEARCH ON CLOSED-CELL SPONGE  
AS A PRESSURE TECHNIQUE FOR  
PROTECTIVE ASSEMBLIES.\*

AD-652 653

**SPACE STATIONS**

EVALUATION OF MANNED ORBITING  
LABORATORY DESIGN DEFINITION  
PRESSURE GARMENTS.\*

AD-842 833

**STRESS (PHYSIOLOGY)**

METABOLIC MECHANISMS OF MAN IN  
THE FULL PRESSURE SUIT.  
PHYSIOLOGICAL COST OF DONNING A  
FULL PRESSURE SUIT.

AD-609 937

**TEMPERATURE CONTROL**

PASSIVE THERMAL CONTROL SYSTEMS  
FOR ADVANCED SPACE SUIT CONCEPTS.\*

AD-714 224

**TESTS**

REPRINT: WILEY POST: FIRST  
TEST OF HIGH ALTITUDE PRESSURE  
SUITS IN THE UNITED STATES.

AD-816 952

TEST AND EVALUATION OF U. S. AIR  
FORCE EXPERIMENTAL CUTAWAY TYPE  
ANTI-BLACKOUT SUITS DESIGNATED MA-

1.

AD-622 047

**THERMAL INSULATION**

SURVEY OF THERMAL CONTROL  
TECHNIQUES FOR EXTRAVEHICULAR SPACE  
SUITS.\*

AD-687 149

**USSR**

HIGH-ALTITUDE PRESSURE SUITS AND  
HERMETICALLY SEALED CABINS FOR  
STRATOSPHERIC FLIGHTS.

AD-458 909

**VENTILATION**

PHYSIOLOGICAL EFFECTS OF  
DIFFERENT OXYGEN FLOW RATES AND  
AMBIENT TEMPERATURES ON PRESSURE-  
SUITED SUBJECTS PERFORMING WORK AT  
ALTITUDE.\*

AD-663 907

**VULNERABILITY**

METEOROID THREAT TO  
EXTRAVEHICULAR SPACE SUIT  
ASSEMBLIES.\*

AD-691 461

**\*PROJECTILES**

**HAZARDS**

METEOROID THREAT TO  
EXTRAVEHICULAR SPACE SUIT  
ASSEMBLIES.\*

AD-691 461

**\*PROTECTIVE CLOTHING**

THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.\*

AD-770 378

PHYSIOLOGICAL EFFECTS OF WEARING  
THE FIRE PROXIMITY SUIT ON CRASH  
TRUCK ALERT STATUS TO HOT-DRY AND  
HOT-HUMID ENVIRONMENTS.\*

AD-773 828

FABRIC-PROTECTORS--TRANSLATION.

AD-781 309

COVERALL, CW PROTECTIVE:  
STORAGE AND PACKAGING.\*

AD-781 520

D-17

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

PRO-PRO

UH-1 DOOR GUNNER PROTECTION.\*  
AD-782 112

ABSORPTION  
SOME EFFECTS OF ABSORBENCY OF  
CLOTHING MATERIALS.\*  
AD-655 147

ACCELERATION TOLERANCE  
REPRINT: G(Z) PROTECTION  
AFFORDED BY STANDARD AND  
PREACCELERATION INFLATIONS OF THE  
BLADDER AND CAPSTAN TYPE G-SUITS.  
AD-761 779

AIRCRAFT CARRIERS  
INVESTIGATION AND  
RECOMMENDATIONS CONCERNING  
PROTECTIVE CLOTHING AND EQUIPMENT  
FOR NAVY PERSONNEL ON FLIGHT AND  
HANGAR DECKS OF AIRCRAFT CARRIERS.\*  
AD-872 758

AIRCRAFT FIRES  
ANALYSIS OF THE THERMAL RESPONSE  
OF PROTECTIVE FABRICS.\*  
AD-759 525

ANTHROPOMETRY  
HEIGHT-WEIGHT SIZING OF  
PROTECTIVE GARMENTS, BASED ON  
JAPANESE AIR SELF-DEFENSE FORCE  
PILOT DATA, WITH FIT-TEST RESULTS.  
AD-606 039

ARMY PERSONNEL  
POSSIBLE RESEARCH SOLUTIONS FOR  
PROTECTING SOLDIERS IN ARCTIC  
REGIONS.  
AD-613 189  
SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE CREWMEN  
(SUMMER).\*  
AD-856 281

ASTRONAUTS  
A STUDY OF TECHNIQUES AND  
EQUIPMENT FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE  
GARMENTS.\*  
AD-635 206

THE OUTFITTING OF THE PILOT AND  
THE COSMONAUT--TRANSLATION.  
AD-682 156

BIOLOGICAL WARFARE  
REPRINT: A METHOD OF RELATING  
PHYSIOLOGY AND MILITARY  
PERFORMANCE: A STUDY OF SOME  
EFFECTS OF VAPOR BARRIER CLOTHING  
IN A HOT CLIMATE.  
AD-672 876

BIOLOGICAL WARFARE AGENTS  
PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-682 730

BLAST  
RESEARCH AND DEVELOPMENT OF  
BLAST PROTECTIVE FOOTWEAR,  
FABRICATION AND PROOFTESTING.\*  
AD-648 417

BODY TEMPERATURE  
REPRINT: CURRENT CONCEPTS AND  
PRACTICES APPLICABLE TO THE CONTROL  
OF BODY HEAT LOSS IN AIRCREW  
SUBJECTED TO WATER IMMERSION.  
AD-635 052

CAMOUFLAGE  
MODERN COUNTER-SURVEILLANCE IN  
COMBAT CLOTHING.\*  
AD-713 573

CHEMICAL WARFARE AGENTS  
DEVELOPMENT OF CHARCOAL  
IMPREGNATION PROCESS FOR CW  
PROTECTIVE OVERGARMENT.\*  
AD-805 099

COLD WEATHER TESTS  
RESPIRATORY AND MICROCLIMATE  
TEMPERATURES WITHIN THE PARKA HOOD  
IN EXTREME COLD.  
AD-608 139

COMPOSITE MATERIALS  
DEVELOPMENT OF A LIGHTWEIGHT  
BUTYL-COATED STRETCH FABRIC.\*

UNCLASSIFIED

PRO-PRO

AD-677 116

CONSTRUCTION  
FUNCTIONAL SPECIAL CLOTHING FOR  
BUILDERS--TRANSLATION.  
AD-742 816

CONTROLLED ATMOSPHERES  
MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) CLOTHING SYSTEMS  
FOR MILITARY APPLICATIONS.\*  
AD-713 581

COOLING  
A COOLING HOOD IN HOT-HUMID  
ENVIRONMENTS.\*  
AD-684 582

DEVELOPMENT OF A PERSONAL  
COOLING SYSTEM FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-702 245

PROTECTION OF AIRCREWS FROM HIGH  
TEMPERATURES; USE OF A WATER-COOLED  
GARMENT FOR HEAT BALANCE STUDIES IN  
MAN.\*

AD-727 222  
EVAPORATIVE COOLING OF MEN IN  
WET CLOTHING.\*  
AD-740 738

DESIGN  
MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) PROTECTIVE CLOTHING  
SYSTEM FOR MILITARY APPLICATIONS.\*

AD-682 715  
PROGRESS REPORT ON THE DAMAGE  
CONTROL SUIT SYSTEM.\*

AD-726 698  
DEVELOPMENT AND EVALUATION OF AN  
OXYGEN-SENSING WARNING DEVICE.\*  
AD-735 377

EXPERIMENTAL SPACE WORKER'S  
GARMENT AND HELMET ASSEMBLY.\*  
AD-738 088

THE DEVELOPMENT OF A BUOYANT-  
BALLISTIC VEST FOR NAVAL FORCES.\*  
AD-749 345

ROCKET PROPELLANT HANDLER'S  
SUIT.\*  
AD-876 932

#### DIVING

PHYSIOLOGICAL EVALUATION OF A  
FREE-FLOODING DIVER HEAT  
REPLACEMENT GARMENT.\*  
AD-684 479

#### EFFECTIVENESS

TROPICAL COMBAT UNIFORM (PONCHOS  
AND GROUND CLOTHS).\*

AD-815 865

#### ENVIRONMENT

PROCEEDINGS OF THE SYMPOSIUM ON  
INDIVIDUAL COOLING, MARCH 17-18,  
1969.\*

AD-694 130

#### ENVIRONMENTAL TESTS

REPRINT: WORK CLOTHES.

AD-688 057

ENGINEERING TEST OF BOOT,  
COMBAT, MOUNTAIN AND SKI.\*

AD-835 549

ENGINEERING TEST OF FUNCTIONAL  
SUMMER UNIFORM FOR ARMORED VEHICLE  
CREWMEN.\*

AD-856 438

#### EXPANDED PLASTICS

REPRINT: MOISTURE TRANSFER  
THROUGH IMPERMEABLE FOAM  
INSULATIONS.

AD-685 042

#### FEET

FOOTWEAR FOR INUNDATED AREAS.\*  
AD-765 684

#### FIRE RESISTANT TEXTILES

DEVELOPMENT OF AN INTEGRAL,  
NEOPRENE-COATED, ALUMINIZED,  
ASBESTOS CLOTH FOR FIRE FIGHTERS'  
SHIPBOARD COVERALLS.\*

AD-746 159

#### FLIGHT CREWS

AIRCREW COOLING STUDY.\*  
AD-668 139

#### FOAM RUBBER

RESEARCH ON CLOSED-CELL SPONGE

D-19

UNCLASSIFIED

/ZUM08

UNCLASSIFIED

PRO-PRO

AS A PRESSURE TECHNIQUE FOR  
PROTECTIVE ASSEMBLIES.\*  
AD-652 653

FRICTION  
INVESTIGATION OF METHODS FOR  
IMPROVING THE FRICTIONAL PROPERTIES  
OF RUBBER COMPOUNDS USED IN  
FOOTWEAR.\*  
AD-733 312

GLOVES  
EFFECTS OF VARIOUS GASES ON  
HANDGEAR INSULATION.  
AD-628 367

HEAT TOLERANCE  
PHYSIOLOGICAL EVALUATION OF  
EFFECTS ON PERSONNEL WEARING THE  
MICROWAVE PROTECTIVE SUIT AND  
OVERGARMENT.\*  
AD-690 890

HEAT TRANSFER  
FLOW OF HEAT AND WATER VAPOR  
THROUGH PROTECTIVE CLOTHING.\*  
AD-712 994

HEATERS  
INVESTIGATION OF THE PERFORMANCE  
OF AN OPEN-FLAME CONVECTOR.\*  
AD-636 398

HEATING  
EVALUATION CRITERIA FOR HEATED  
DIVER SUIT SYSTEMS.\*  
AD-884 560

IMPREGNATION  
IMPREGNATION PLANT IMPROVEMENT  
TESTS.\*  
AD-723 549

LEAKAGE (FLUID)  
A STUDY OF SEAM LEAKAGE IN  
COATED FABRICS.\*  
AD-708 874

LIFE SUPPORT  
DAMAGE CONTROL SUIT SYSTEM.\*  
AD-762 428

LIQUID ROCKET OXIDIZERS  
A ROCKET PROPELLANT HANDLER'S  
SUIT FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL  
FLUORINE.\*  
AD-731 556

LOW TEMPERATURE  
PHYSIOLOGICAL EVALUATION OF  
SUBJECTS EXPOSED TO A COLD WATER  
ENVIRONMENT WHILE WEARING DIFFERENT  
PROTECTIVE SUIT ASSEMBLIES.\*  
AD-724 617  
COLD WATER PROTECTION UNDER  
FIELD CONDITIONS.\*  
AD-738 822

MANUFACTURING  
ENGINEERING RESEARCH PROTOTYPE  
DISTRIBUTION SYSTEMS FOR  
THERMALBRIUM CLOTHING.\*  
AD-666 226

MATERIALS  
REACTIVITY OF VARIOUS DAMAGE  
CONTROL PROTECTIVE CLOTHING  
MATERIALS WITH CHLORINE  
TRIFLUORIDE.\*  
AD-646 062

MILITARY PERSONNEL  
VENTILATING BACKPACK FOR THE  
SUIT SYSTEM; TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
(CB PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).\*  
AD-748 838

PERFORMANCE (ENGINEERING)  
ENGINEERING TEST OF PONCHO,  
LIGHTWEIGHT (LINCLOE).\*  
AD-817 192

PERFORMANCE (HUMAN)  
REPRINT: WATER COOLED HOOD  
AFFECTS CREATIVE PRODUCTIVITY.  
AD-724 020

RADIOACTIVE ISOTOPES  
FEASIBILITY STUDY AND CONCEPTUAL  
DESIGN FOR A PERSONAL THERMAL

UNCLASSIFIED

PRO-PRO

CONDITIONING SYSTEM.\*

AD-670 212

SHOES

DEVELOPMENT OF LIGHTWEIGHT (COLD-WET) INSULATED FOOTWEAR.\*

AD-766 690

DEVELOPMENT, FABRICATION AND PROOFTESTING OF OPTIMUM FOOT PROTECTION AGAINST ANTIPERSONNEL MINES USING A SUPPLEMENTARY DEVICE.\*

AD-813 883

SPACE ENVIRONMENT

STUDY AND DEVELOPMENT OF MATERIALS AND TECHNIQUES FOR PASSIVE THERMAL CONTROL OF FLEXIBLE EXTRAVEHICULAR SPACE GARMENTS.

AD-624 886

STRESS (PHYSIOLOGY)

TACTICAL IMPLICATIONS OF THE PHYSIOLOGICAL STRESS IMPOSED BY CHEMICAL PROTECTIVE CLOTHING SYSTEMS.\*

AD-713 530

SURVIVAL (PERSONNEL)

REVIEW OF CURRENT CONCEPTS AND PRACTICES USED TO CONTROL BODY HEAT LOSS DURING WATER IMMERSION.

AD-614 241

TEMPERATURE CONTROL

FLOW OF HEAT AND VAPOR THROUGH COMPOSITE PERM-SELECTIVE MEMBRANES UNDER SIMULATED CONDITIONS.\*

AD-671 681

THERMOELECTRIC HEATING AND VENTILATING SYSTEM.\*

AD-737 720

TEST METHODS

BOOYS, CB PROTECTIVE.\*

AD-719 112

HOODS, PROTECTIVE.\*

AD-719 113

ARCTIC ENVIRONMENTAL TEST OF CB PROTECTIVE CLOTHING, PROTECTIVE MASKS AND WINTERIZATION KITS.\*

AD-719 131

COMBAT UNIFORMS.\*

AD-748 091

CLOTHING AND EQUIPMENT, INDIVIDUAL, PROTECTIVE, CB.\*

AD-752 128

GARMENTS, OUTER (WET WEATHER).\*

AD-755 643

COMBAT UNIFORMS AND PROTECTIVE EQUIPMENT.\*

AD-763 001

COMBAT UNIFORMS.\*

AD-873 485

TESTS

EFFECT OF SAFETY GLOVES ON SIMULATED WORK TASKS.\*

AD-738 981

THERMAL

THERMAL-PHYSICAL PARAMETERS OF MATERIALS.\*

AD-631 295

THERMAL INSULATION

REPRINT: 'WET' VERSUS 'DRY'

SUIT APPROACHES TO WATER IMMERSION PROTECTIVE CLOTHING.

AD-638 092

HEAT TRANSFER THROUGH FABRICS.\*

AD-712 505

CALCULATION OF THE THERMAL RESISTANCE OF THE AIR LAYERS IN AIR-PERMEABLE CLOTHING--TRANSLATION.

AD-746 037

A METHOD AND RATING SYSTEM FOR EVALUATION OF THERMAL PROTECTION.\*

AD-846 419

THERMAL PROPERTIES

ASSESSMENT OF THE THERMAL

RESISTANCE OF CLOTHING--TRANSLATION.

AD-750 830

THERMAL RADIATION

DEVELOPMENT OF HIGH-INTENSITY

THERMAL PROTECTIVE FABRIC.\*

AD-659 974

TRANSPORT PROPERTIES

D-21

UNCLASSIFIED

/20M08



UNCLASSIFIED

PRO-ROC

INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.\*  
AD-691 144

TROPICAL REGIONS  
ENGINEERING TEST OF JUNGLE HAT  
WITH HEADNET.\*  
AD-835 403

TROPICAL TESTS  
TROPIC SERVICE TEST OF  
FUNCTIONAL UNIFORM FOR ARMORED  
VEHICLE CREWMEN.\*  
AD-857 571

WEATHERPROOFING  
DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.\*  
AD-756 457

\*PROTECTIVE COVERINGS  
ARMY RESEARCH  
RESEARCH ON ACOUSTICAL PROBLEMS  
OF THE MILITARY: A REVIEW AND  
FUTURE ASPECT.\*  
AD-680 165

EFFECTIVENESS  
TROPICAL COMBAT UNIFORM (PONCHOS  
AND GROUND CLOTHS).\*

HEATING  
TIMED HEAT-RELEASE CHEMICAL  
SYSTEM FOR UNDERWATER APPLICATIONS;  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.\*  
AD-647 892

SMOKE  
PROTECTIVE SMOKE HOOD STUDIES.\*  
AD-727 021

\*PROTECTIVE MASK FACEPIECES  
PRESSURE SUITS  
RESEARCH AND DEVELOPMENT OF  
HELMET FACEPIECES FOR SPACE  
PROTECTIVE ASSEMBLIES.\*  
AD-652 248

\*PROTECTIVE MASKS  
SMOKE  
PROTECTIVE SMOKE HOOD STUDIES.\*  
AD-727 021

TEST METHODS  
ARCTIC ENVIRONMENTAL TEST OF CB  
PROTECTIVE CLOTHING, PROTECTIVE  
MASKS AND WINTERIZATION KITS.\*  
AD-719 131

\*PROTECTIVE TREATMENTS  
MANUFACTURING  
DEVELOPMENT OF CHARCOAL  
IMPREGNATION PROCESS FOR CW  
PROTECTIVE OVERGARMENT.\*  
AD-805 099

\*PUMPS  
PERFORMANCE (ENGINEERING)  
EVALUATION OF THE NSRD L HEATER  
PUMP PERFORMANCE CHARACTERISTICS  
AND RELIABILITY.\*  
AD-694 023

\*RADIOACTIVE ISOTOPES  
HEAT TRANSFER  
FEASIBILITY STUDY AND CONCEPTUAL  
DESIGN FOR A PERSONAL THERMAL  
CONDITIONING SYSTEM.\*  
AD-670 212

HEATERS  
EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.\*  
AD-705 064

\*RESPIRATION  
COLD WEATHER TESTS  
RESPIRATORY AND MICROCLIMATE  
TEMPERATURES WITHIN THE PARKA HOOD  
IN EXTREME COLD.  
AD-608 139

LIFE SUPPORT  
EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.  
AD-608 088

\*ROCKET MOTORS (LIQUID PROPELLANT)

D-22  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

ROC-S40

- PORTABLE EQUIPMENT**  
INTEGRATED BACK-PACK MANEUVERING  
UNIT PROPULSION STUDY AND EXHAUST  
PLUME HEATING ANALYSIS.  
AD-609 206
- \*ROCKET PROPELLANTS**  
HANDLING  
ROCKET PROPELLANT HANDLER'S  
SUIT.\*  
AD-876 932
- \*RUBBER COATINGS**  
FLIGHT CLOTHING  
METHODS OF SANITIZING AND  
DEODORIZING RUBBERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.  
AD-609 164
- \*SAFETY DEVICES**  
BAR  
SOUND ATTENUATION  
CHARACTERISTICS OF THE PROJECT  
MERCURY PRE-PRODUCTION FULL  
PRESSURE SUIT HELMET.  
AD-622 197
- \*SCUBA DIVERS**  
PROTECTIVE CLOTHING  
EVALUATION CRITERIA FOR HEATED  
DIVER SUIT SYSTEMS.\*  
AD-884 560
- \*SEA RESCUE EQUIPMENT**  
REVIEWS  
AEROSPACE LIFE SUPPORT SYSTEMS  
AND CREW PROTECTIVE EQUIPMENT.\*  
AD-668 840
- \*SEA RESCUES**  
UNDERWATER CLOTHING  
EVALUATION FOR SERVICE USE OF A  
PROTO-TYPE SWIMMER'S RESCUE SUIT.\*  
AD-663 634
- \*SENSORS**  
OXYGEN  
DEVELOPMENT AND EVALUATION OF AN  
OXYGEN-SENSING WARNING DEVICE.\*  
AD-735 377
- \*SHIP FIRES**  
NAVAL PERSONNEL  
DEVELOPMENT OF AN INTEGRAL,  
NEOPRENE-COATED, ALUMINIZED,  
ASBESTOS CLOTH FOR FIRE FIGHTERS.  
SHIPBOARD COVERALLS.\*  
AD-746 159
- \*SHOES**  
ACCEPTABILITY  
QUICK DOWNING FLIGHT BOOT.\*  
AD-835 066
- FIRE PROTECTIVE CLOTHING**  
DEVELOPMENT OF REFLECTIVE  
MATERIALS FOR FIRE FIGHTER'S  
BOOTS.\*  
AD-762 544
- ISOCYANATE PLASTICS**  
DEVELOPMENT OF LIGHTWEIGHT (COLD-  
WET) INSULATED FOOTWEAR.\*  
AD-766 690
- MOUNTAINS**  
ENGINEERING TEST OF BOOT,  
COMBAT, MOUNTAIN AND SKI.\*  
AD-835 549
- PROTECTIVE CLOTHING**  
ENGINEERING TEST OF SPIKE-  
RESISTANT INSOLE.  
AD-474 980
- RESEARCH AND DEVELOPMENT OF**  
BLAST PROTECTIVE FOOTWEAR,  
FABRICATION AND PROOFTESTING.\*  
AD-648 417
- DEVELOPMENT, FABRICATION AND**  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTIPERSONNEL  
MINES USING A SUPPLEMENTARY  
DEVICE.\*  
AD-813 883
- RUBBER**  
INVESTIGATION OF METHODS FOR  
IMPROVING THE FRICTIONAL PROPERTIES  
OF RUBBER COMPOUNDS USED IN  
FOOTWEAR.\*  
AD-733 312

D-23

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

SKI-SUR

TEST METHODS

BOOTS, CB PROTECTIVE.\*  
AD-719 112

\*SKIN(ANATOMY)

BURNS(INJURIES)  
ANALYSIS OF THE THERMAL RESPONSE  
OF PROTECTIVE FABRICS.\*  
AD-759 525

\*SPACE CREWS

PRESSURE SUITS  
FULL PRESSURE SUIT FOR SPACE  
CREWS.\*  
AD-839 425  
SLIP NET MOBILITY JOINTS FOR  
PRESSURE SUITS.\*  
AD-848 605

\*SPACE ENVIRONMENTS

LIFE SUPPORT  
SLIP NET MOBILITY JOINTS FOR  
PRESSURE SUITS.\*  
AD-848 605

PROTECTIVE CLOTHING

EXPERIMENTAL SPACE WORKER'S  
GARMENT AND HELMET ASSEMBLY.\*  
AD-738 088

\*SPACE PROPULSION

FLIGHT CLOTHING  
INTEGRATED BACK-PACK MANEUVERING  
UNIT PROPULSION STUDY AND EXHAUST  
PLUME HEATING ANALYSIS.  
AD-609 206

\*SPACE STATIONS

HEAT EXCHANGERS  
CONDENSATE WETTING OF SUIT HEAT  
EXCHANGER WATER SEPARATOR PLATES.\*  
AD-856 891

PRESSURE SUITS

REVERSE PRESSURE EFFECT ON SUIT  
DEMAND REGULATOR.\*  
AD-856 673

WEIGHTLESSNESS

MOL ZERO G DEVELOPMENT TEST  
REPORT. DD FORM 1423 DATA ITEM UT-

(110).\*

AD-856 542

\*STRESS(PHYSIOLOGY)

PROTECTIVE CLOTHING  
TACTICAL IMPLICATIONS OF THE  
PHYSIOLOGICAL STRESS IMPOSED BY  
CHEMICAL PROTECTIVE CLOTHING  
SYSTEMS.\*  
AD-713 530

\*SUBMARINE ESCAPE

HUMAN ENGINEERING  
HUMAN FACTORS EVALUATION OF  
SUBMARINE ESCAPE: II-A. TOP  
EGRESS WITH THE BRITISH SUBMARINE  
ESCAPE IMMERSION SUIT AND THE  
STEINKE HOOD.\*  
AD-730 711

UNDERWATER CLOTHING

FIELD EVALUATION OF MODIFIED  
SUBMARINE RESCUE AND ESCAPE SUITS.\*  
AD-863 886  
PHYSIOLOGICAL EVALUATION OF THE  
BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT DURING IMMERSION.\*  
AD-868 809

\*SURFACE ACTIVE SUBSTANCES

HEAT OF SOLUTION  
TIMED HEAT-RELEASE CHEMICAL  
SYSTEM FOR UNDERWATER APPLICATIONS;  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.\*  
AD-647 892

\*SURFACE TO SURFACE MISSILES

ARMY EQUIPMENT  
HUMAN FACTORS STUDY OF GMC  
CLOTHING AND EQUIPMENT DURING COLD  
WEATHER TESTS OF THE SERGEANT  
MISSILE SYSTEM, II.\*  
AD-701 864  
HUMAN FACTORS STUDY OF GMC  
CLOTHING AND EQUIPMENT DURING COLD  
WEATHER TESTS OF THE PERSHING  
MISSILE SYSTEM.\*  
AD-701 872

\*SURVIVAL KITS

/ZOM08

D-24  
UNCLASSIFIED

ARCTIC REGIONS  
FEASIBILITY STUDY AND CONCEPTUAL  
DESIGN FOR A PERSONAL THERMAL  
CONDITIONING SYSTEM.\*  
AD-670 212

\*SURVIVAL (PERSONNEL)  
PROTECTIVE CLOTHING  
REVIEW OF CURRENT CONCEPTS AND  
PRACTICES USED TO CONTROL BODY HEAT  
LOSS DURING WATER IMMERSION.  
AD-614 241

UNDERWATER CLOTHING  
AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCRAFTS.\*  
AD-637 153

\*SWEAT GLANDS  
THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.\*  
AD-770 378

\*SYMPOSIA  
COOLING  
PROCEEDINGS OF THE SYMPOSIUM ON  
INDIVIDUAL COOLING, MARCH 17-18,  
1969.\*  
AD-694 130

\*SYNTHETIC RUBBER  
UNDERWATER CLOTHING  
DIVERS' BODY HEAT LOSS:  
DESCRIBES A STUDY OF THE ENDURANCE  
OF UNDERWATER SWIMMERS WEARING A  
VARIETY OF FOAM NEOPRENE WET SUITS  
AND IMMersed AT 30-32F IN THE NEL  
ARCTIC POOL.\*  
AD-652 405

\*TELEMETRY SYSTEMS  
PRESSURE SUITS  
DESCRIPTION AND OPERATING  
INSTRUCTIONS FOR A 7-CHANNEL  
TELEMETRY SYSTEM FOR PHYSIOLOGICAL  
TEMPERATURES AND THE  
ELECTROCARDIOGRAM.\*  
AD-686 067

\*TEMPERATURE CONTROL  
PRESSURE SUITS  
TECHNIQUES AND MATERIALS FOR  
PASSIVE THERMAL CONTROL OF RIGID  
AND FLEXIBLE EXTRAVEHICULAR SPACE  
ENCLOSURES.\*  
AD-666 940

PROTECTIVE  
STUDY AND DEVELOPMENT OF  
MATERIALS AND TECHNIQUES FOR  
PASSIVE THERMAL CONTROL OF FLEXIBLE  
EXTRAVEHICULAR SPACE GARMENTS.  
AD-624 886

PROTECTIVE CLOTHING  
FLOW OF HEAT AND VAPOR THROUGH  
COMPOSITE PERM-SELECTIVE MEMBRANES  
UNDER SIMULATED CONDITIONS.\*  
AD-671 681

\*TEST FACILITIES  
DESIGN  
THE TESTING OF THERMAL  
PROTECTIVE CLOTHING IN A  
REPRODUCIBLE FUEL FIRE ENVIRONMENT,  
A FEASIBILITY STUDY.\*  
AD-729 362

UNDERWATER CLOTHING  
HYDROSPACE SIMULATOR FACILITY  
FOR MATERIALS TESTING.\*  
AD-739 695

\*TEXTILES  
CLEANING COMPOUNDS  
METHODS OF SANITIZING AND  
DEODORIZING RUBBERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.  
AD-609 164

FIRE SAFETY  
ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.\*  
AD-732 429

HEAT TRANSFER  
HEAT TRANSFER THROUGH FABRICS.\*

UNCLASSIFIED

THE-UND

AD-712 505

**LAMINATES**

DEVELOPMENT OF LAMINATED FABRIC MATERIALS.\*

AD-756 457

**MOISTUREPROOFING**

A STUDY OF SEAM LEAKAGE IN COATED FABRICS.\*

AD-708 874

**PROTECTIVE CLOTHING**

DEVELOPMENT OF HIGH-INTENSITY THERMAL PROTECTIVE FABRIC.\*

AD-659 974

**THERMAL INSULATION**

THERMAL-PHYSICAL PARAMETERS OF MATERIALS.\*

AD-631 295

DESIGN OF WOVEN AND LAMINATED FABRICS FOR TESTING OF THERMAL RESISTANCE.\*

AD-638 560

**THERMAL PROPERTIES**

ANALYSIS OF THE THERMAL RESPONSE OF PROTECTIVE FABRICS.\*

AD-759 525

**\*THERMAL INSULATION**

**FLIGHT CLOTHING**

DEVELOPMENT OF PRACTICAL HIGH-INTENSITY THERMAL PROTECTION SYSTEMS.\*

AD-709 570

**PRESSURE SUITS**

SURVEY OF THERMAL CONTROL TECHNIQUES FOR EXTRAVEHICULAR SPACE SUITS.\*

AD-687 149

**PROTECTIVE CLOTHING**

HEAT TRANSFER THROUGH FABRICS.\*

AD-712 505

A METHOD AND RATING SYSTEM FOR EVALUATION OF THERMAL PROTECTION.\*

AD-846 419

**SHOES**

DEVELOPMENT OF LIGHTWEIGHT (COLD-WET) INSULATED FOOTWEAR.\*

AD-766 690

**TEXTILES**

THERMAL-PHYSICAL PARAMETERS OF MATERIALS.\*

AD-631 295

DESIGN OF WOVEN AND LAMINATED FABRICS FOR TESTING OF THERMAL RESISTANCE.\*

AD-638 560

**UNDERWATER CLOTHING**

DEVELOPMENT AND EVALUATION OF DEEP-SEA SWIMSUIT MATERIALS.\*

AD-763 378

**\*THERMAL PROPERTIES**

**PROTECTIVE CLOTHING**

ASSESSMENT OF THE THERMAL RESISTANCE OF CLOTHING--TRANSLATION.

AD-750 830

**\*THERMOELECTRICITY**

**AIR CONDITIONING EQUIPMENT**

THERMOELECTRIC HEATING AND VENTILATING SYSTEM.\*

AD-737 720

**\*UNDERWATER CLOTHING**

EVALUATION OF MODIFIED DIVERS'

DRESS.\*

AD-777 740

**ARCTIC REGIONS**

DIVERS' BODY HEAT LOSS: DESCRIBES A STUDY OF THE ENDURANCE OF UNDERWATER SWIMMERS WEARING A VARIETY OF FOAM NEOPRENE WET SUITS AND IMMersed AT 30-32F IN THE NEL ARCTIC POOL.\*

AD-652 405

**BREATHING APPARATUS**

DIVER EQUIPMENT TESTS PERFORMED DURING THE JOINT U. S. NAVY/DUKE UNIVERSITY 1000 FOOT SATURATION DIVE.\*

D-26

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

THE-UND

AD-692 423

BUOYANCY  
EVALUATION OF ONE PIECE WET  
SUIT.\*  
AD-669 230

DESIGN  
PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.\*  
AD-729 664  
DEVELOPMENT AND EVALUATION OF  
DEEP-SEA SWIMSUIT MATERIALS.\*  
AD-763 378

DIVING  
SECOND SERIES U.S. RUBBER  
COMPANY LIGHTWEIGHT DIVING OUTFITS  
WITH AIRLINE AND DEMAND SUPPLY.\*  
AD-893 971

EFFECTIVENESS  
COLD WATER EVALUATION OF  
ENVIRONMENTAL MARINE DIVING SUITS.\*  
AD-754 278

EFFICIENCY  
COLD WATER PROTECTION UNDER  
FIELD CONDITIONS.\*  
AD-738 822

HEATERS  
DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.\*  
AD-727 606  
A REVIEW OF AVAILABLE HEATED WET-  
SUIT PROTECTION FOR DIVERS AND  
SWIMMERS.\*  
AD-768 313

HEATING  
EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.\*  
AD-705 064  
CHEMICAL HEAT SOURCE FOR WET  
SUITS.\*  
AD-844 923

HEATING ELEMENTS  
EVALUATION OF THE NSRDL HEATER

PUMP PERFORMANCE CHARACTERIZATICS  
AND RELIABILITY.\*  
AD-694 023  
SCALAB III - DIVER'S ISOTOPIC  
SWIMSUIT-HEATER SYSTEM.\*  
AD-708 680

LOW TEMPERATURE  
PHYSIOLOGICAL EVALUATION OF  
SUBJECTS EXPOSED TO A COLD WATER  
ENVIRONMENT WHILE WEARING DIFFERENT  
PROTECTIVE SUIT ASSEMBLIES.\*  
AD-724 617

MILITARY REQUIREMENTS  
AD HOC COMMITTEE REPORT.\*  
AD-699 170

PERFORMANCE(ENGINEERING)  
EVALUATION FOR SERVICE USE OF A  
PROTO-TYPE SWIMMER'S RESCUE SUIT.\*  
AD-663 634  
PHYSIOLOGICAL EVALUATION OF THE  
BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT DURING IMMERSION.\*  
AD-668 809  
CANADIAN SELF-CONTAINED DIVING  
EQUIPMENT PERFORMANCE TESTS.\*  
AD-892 053

PERFORMANCE(HUMAN)  
NAVAL APPLICATIONS OF MAN-IN-THE-  
SEA CONCEPTS - MISSION DEFINITION.\*  
AD-863 709

SCUBA DIVERS  
EVALUATION OF LIGHTWEIGHT DEEP  
SEA DIVING DRESS.\*  
AD-909 928

SUBMARINE ESCAPE  
HUMAN FACTORS EVALUATION OF  
SUBMARINE ESCAPE: II-A. TOP  
EGRESS WITH THE BRITISH SUBMARINE  
ESCAPE IMMERSION SUIT AND THE  
STEINKE HOOD.\*  
AD-730 711

SURVIVAL(PERSONNEL)  
AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A

D-27

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

UND-WIN

SURVIVAL GARMENT FOR HELICOPTER  
AIRCREWS.\*  
AD-637 153

TEST FACILITIES  
HYDROSPACE SIMULATOR FACILITY  
FOR MATERIALS TESTING.\*  
AD-739 695

THERMAL ANALYSIS  
THEORETICAL THERMAL REQUIREMENTS  
FOR THE MARK II DIVING SYSTEM.\*  
AD-694 013  
EVALUATION OF HEAT LOSS FROM  
NAVY DIVERS' WET SUIT.\*  
AD-747 276

THERMAL INSULATION  
REVIEW OF CURRENT CONCEPTS AND  
PRACTICES USED TO CONTROL BODY HEAT  
LOSS DURING WATER IMMERSION.  
AD-614 241

\*UNDERWATER EQUIPMENT  
FLAME-RETARDANT CLOTHING AND  
TEXTILE ITEMS FOR USE IN OXYGEN-  
ENRICHED ENVIRONMENTS OF  
DECOMPRESSION CHAMBERS.\*  
AD-779 886

\*UNDERWATER VEHICLES  
HUMANS  
NAVAL APPLICATIONS OF MAN-IN-THE-  
SEA CONCEPTS - MISSION DEFINITION.\*  
AD-863 709

\*UNDERWEAR  
DESIGN  
DEVELOPMENT OF A PERSONAL  
COOLING SYSTEM FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.\*  
AD-702 245

THERMAL PROPERTIES  
ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.\*  
AD-732 429

\*WEATHERPROOFING

TEXTILES  
DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.\*  
AD-756 457

\*WEIGHTLESSNESS  
HUMAN FACTORS ENGINEERING  
MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS.  
AD-626 979

\*WIND  
FLIGHT CLOTHING .  
WINDBLAST TEST OF HIGH-ALTITUDE  
FLYING OUTFIT A/P22S-4.\*  
AD-877 249

## UNCLASSIFIED

## TITLE INDEX

ACOUSTICAL EVALUATION OF X-20A DYNA-SOAR FULL-PRESSURE SUIT ASSEMBLIES.(U)	AD-618 715	PROTECTION.(U)	
*PRESSURE SUITS		*ARMY PERSONNEL	
AD HOC COMMITTEE REPORT.(U)	AD-699 170	ASSESSMENT OF THE THERMAL RESISTANCE OF CLOTHING.(U)	AD-750 830
*UNDERWATER CLOTHING		*HEAT RESISTANT MATERIALS	
ADVANCES IN THE DEVELOPMENT OF HEAD PROTECTION FOR AIRCRAFT CREWMEN.(U)	AD-665 388	AN AUTOMATIC ANALOG BREATHING SYSTEM FOR MULTICELL PRESSURE SUITS.(U)	AD-687 436
*HELMETS		*PRESSURE SUITS	
AEROSPACE LIFE SUPPORT SYSTEMS AND CREW PROTECTIVE EQUIPMENT.(U)	AD-668 840	AUTOMATIC TEMPERATURE CONTROL FOR LIQUID-COOLED FLIGHT SUITS.(U)	AD-655 834
*LIFE SUPPORT		*FLIGHT CLOTHING	
AIRCREW COOLING STUDY.(U)	AD-668 139	BACKGROUND AND DEVELOPMENT OF BOYLE'S LAW ALTITUDE SUITS.(U)	AD-761 797
*FLIGHT CREWS		*PRESSURE SUITS	
ANALYSIS OF THE THERMAL RESPONSE OF PROTECTIVE FABRICS.(U)	AD-759 525	THE BEHAVIOR OF PROTECTIVE UNIFORMS IN LARGE-SCALE SIMULATED FIRES.(U)	AD-724 648
*TEXTILES		*FLIGHT CLOTHING	
ANTHROPOLOGICAL APPLICATIONS IN HIGH ALTITUDE FLIGHT SYSTEMS.(U)	AD-706 888	BIOCHEMICAL AND PHYSIOLOGICAL EVALUATION OF HUMAN SUBJECTS WEARING PRESSURE SUITS UNDER SIMULATED AEROSPACE CONDITIONS.(U)	AD-626 619
*ANTHROPOMETRY		*DIET	
ANTHROPOMETRIC DIMENSIONS OF AIR FORCE PRESSURE-SUITED PERSONNEL FOR WORKSPACE AND DESIGN CRITERIA.(U)	AD-697 022	BOOTS, CB PROTECTIVE.(U)	AD-719 112
*ANTHROPOMETRY		*PROTECTIVE CLOTHING	
APPLICATION OF THE RANQUE-HILSCH VORTEX TUBE TO AIRCREW COOLING PROBLEMS.(U)	AD-673 345	CALCULATION OF THE THERMAL RESISTANCE OF THE AIR LAYERS IN AIR-PERMEABLE CLOTHING.(U)	AD-746 037
*HILSCH TUBES		*PROTECTIVE CLOTHING	
ARCTIC ENVIRONMENTAL TEST OF CB PROTECTIVE CLOTHING, PROTECTIVE MASKS AND WINTERIZATION KITS.(U)	AD-719 131	CAMOUFLAGE PRINTING OF NOMEX SUMMER FLYING COVERALLS.(U)	AD-641 247
*PROTECTIVE MASKS		*FLIGHT CLOTHING	
THE ARCTIC SOLDIER: POSSIBLE RESEARCH SOLUTIONS FOR HIS	AD-613 189	CANADIAN SELF-CONTAINED DIVING EQUIPMENT PERFORMANCE TESTS.(U)	AD-892 055
		*UNDERWATER CLOTHING	

T-1  
UNCLASSIFIED

/ZOM08



## UNCLASSIFIED

## CEN-DES

CENTRIFUGE VALIDATION OF A TACTILE 'G-LIMIT' WARNING DEVICE.(U) *FLIGHT CLOTHING	AD-732 194	FULL-PRESSURE SUITS IN TERMS OF CONTROL ACTIVATION TIME.(U) *PRESSURE SUITS	
CHEMICAL HEAT SOURCE FOR WET SUITS.(U) *UNDERWATER CLOTHING	AD-844 923	CONDENSATE WETTING OF SUIT HEAT EXCHANGER WATER SEPARATOR PLATES.(U) *MANNED SPACECRAFT	AD-856 891
CLEARANCE AND PERFORMANCE VALUES FOR THE BARE- HANDED AND THE PRESSURE-GLOVED OPERATOR.(U) *PRESSURE SUITS	AD-681 457	A COOLING HOOD IN HOT- HUMID ENVIRONMENTS.(U) *COOLING	AD-684 582
CLOTHING AND EQUIPMENT, INDIVIDUAL, PROTECTIVE, CB.(U) *PROTECTIVE CLOTHING	AD-752 128	COVERALL, CW PROTECTIVE: STORAGE AND PACKAGING.(U) *PROTECTIVE CLOTHING	AD-781 520
CLOTHING (AVIATION).(U) *FLIGHT CLOTHING	AD-719 106	CURRENT CONCEPTS AND PRACTICES APPLICABLE TO THE CONTROL OF BODY HEAT LOSS IN AIRCREW SUBJECTED TO WATER IMMERSION.(U) *PROTECTIVE CLOTHING	AD-635 052
CLOTHING (AVIATION).(U) *FLIGHT CLOTHING	AD-723 030	DAMAGE CONTROL SUIT SYSTEM.(U) *LIFE SUPPORT	AD-762 428
COLD WATER EVALUATION OF ENVIRONMENTAL MARINE DIVING SUITS.(U) *UNDERWATER CLOTHING	AD-754 278	DESCRIPTION AND EVALUATION OF A PORTABLE DRY-ICF WATER-CONDITIONED SUIT SYSTEM FOR AIRCREWMEMBERS.(U) *FLIGHT CLOTHING	AD-700 915
COLD WATER PROTECTION UNDER FIELD CONDITIONS.(U) *UNDERWATER CLOTHING	AD-738 822	DESCRIPTION AND OPERATING INSTRUCTIONS FOR A 7- CHANNEL TELEMETRY SYSTEM FOR PHYSIOLOGICAL TEMPERATURES AND THE ELECTROCARDIOGRAM.(U) *TELEMETER SYSTEMS	AD-686 067
COMBAT UNIFORMS AND PROTECTIVE EQUIPMENT.(U) *PROTECTIVE CLOTHING	AD-763 001	DESIGN AND DEVELOPMENT OF A HIGH ALTITUDE PROTECTIVE ASSEMBLY.(U) *PRESSURE SUITS	AD-886 642
COMBAT UNIFORMS.(U) *PROTECTIVE CLOTHING	AD-748 091	DESIGN AND FABRICATION OF A PASSIVELY PRESSURIZED SUIT.(U) *PRESSURE SUITS	AD-720 827
COMBAT UNIFORMS.(U) *PROTECTIVE CLOTHING	AD-873 485	DESIGN OF WOVEN AND	AD-638 560
COMPARATIVE EVALUATION OF USAF STANDARD A/P22S-2 AND IMPROVED A/P22S-2A HIGH ALTITUDE, FULL PRESSURE FLYING OUTFITS.(U) *FLIGHT CLOTHING	AD-467 823		
A COMPARISON OF THREE	AD-613 597		

T-2  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

THE DEV

LAMINATED FABRICS FOR TESTING OF  
THERMAL RESISTANCE. (U)  
\*THERMAL INSULATION

THE DESIGN REQUIREMENTS, AD-845 304  
DESCRIPTION AND FUNCTIONAL  
OPERATION OF THE A/P225-4 AND  
A/P225-6 HIGH ALTITUDE, FLYING  
OUTFITS. (U)  
\*PRESSURE SUITS

DEVELOPMENT AND AD-735 377  
EVALUATION OF AN OXYGEN-SENSING  
WARNING DEVICE. (U)  
\*PROTECTIVE CLOTHING

DEVELOPMENT AND AD-763 370  
EVALUATION OF DEEP-SEA SUITSUIT  
MATERIALS. (U)  
\*UNDERWATER CLOTHING

DEVELOPMENT, AD-813 983  
FABRICATION AND PROOTESTING OF  
OPTIMUM FOOT PROTECTION AGAINST  
ANTI-PERSONNEL MINES USING A  
SUPPLEMENTARY DEVICE. (U)  
\*LAND MINES

THE DEVELOPMENT OF A AD-749 345  
BUOYANT-BALLISTIC VEST FOR NAVAL  
FORCES. (U)  
\*PROTECTIVE CLOTHING

DEVELOPMENT OF A HEATER- AD-727 606  
PUMP TO PROTECT A DIVER IN COLD  
WATER. (U)  
\*HEATERS

DEVELOPMENT OF A AD-677 118  
LIGHTWEIGHT BUTYL-COATED STRETCH  
FABRIC. (U)  
\*COMPOSITE MATERIALS

DEVELOPMENT OF A AD-702 245  
PERSONAL COOLING SYSTEM FOR  
EXPLOSIVE ORDNANCE DISPOSAL  
PERSONNEL. (U)  
\*PROTECTIVE CLOTHING

DEVELOPMENT OF AN AD-746 159  
INTEGRAL, NEOPRENE-COATED,

ALUMINIZED, ASBESTOS CLOTH FOR FIRE  
FIGHTERS' SHIPBOARD COVERALLS. (U)  
\*PROTECTIVE CLOTHING

DEVELOPMENT OF CHARCOAL AD-885 699  
IMPREGNATION PROCESS FOR CW  
PROTECTIVE OVERGARMENT. (U)  
\*PROTECTIVE CLOTHING

DEVELOPMENT OF HIGH- AD-659 974  
INTENSITY THERMAL PROTECTIVE  
FABRIC. (U)  
\*PROTECTIVE CLOTHING

DEVELOPMENT OF AD-756 457  
LAMINATED FABRIC MATERIALS. (U)  
\*TEXTILES

DEVELOPMENT OF AD-766 690  
LIGHTWEIGHT (COLD-WET) INSULATED  
FOOTWEAR. (U)  
\*SHOES

DEVELOPMENT OF PBI AD-914 019  
FABRIC FOR FLIGHT SUIT WEAR  
TEST. (U)  
\*FLIGHT CLOTHING

DEVELOPMENT OF AD-709 570  
PRACTICAL HIGH-INTENSITY THERMAL  
PROTECTION SYSTEMS. (U)  
\*FLIGHT CLOTHING

DEVELOPMENT OF AD-762 544  
REFLECTIVE MATERIALS FOR FIRE  
FIGHTER'S BOOTS. (U)  
\*ELASTOMERS

DEVELOPMENT OF REVISED AD-636 423  
SIMPLEX FABRIC FOR SUMMER FLYING  
GLOVES. (U)  
\*FLIGHT CLOTHING

DEVELOPMENT OF AD-737 899  
THERMALLY DURABLE COATED FABRICS  
FOR USE IN FLIGHT GLOVES. (U)  
\*GLOVES

DEVELOPMENT OF AD-644 017  
THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM. (U)

T-3  
UNCLASSIFIED

/ZOM08

## UNCLASSIFIED

## DIV-EVA

## \*HEATERS

DIVER EQUIPMENT TESTS AD-692 423  
PERFORMED DURING THE JOINT U. S.  
NAVY/DUKE UNIVERSITY 1000 FOOT  
SATURATION DIVE.(U)  
\*UNDERWATER CLOTHING

DIVERS' BODY HEAT LOSS: AD-652 405  
DESCRIBES A STUDY OF THE ENDURANCE  
OF UNDERWATER SWIMMERS WEARING A  
VARIETY OF FOAM NEOPRENE WET SUITS  
AND IMMersed AT 30-32F IN THE NEL  
ARCTIC POOL.(U)

\*UNDERWATER CLOTHING

EFFECTIVE LIFE SUPPORT AD-636 044  
HELMETS.(U)  
\*PRESSURE SUITS

EFFECT OF SAFETY GLOVES AD-738 981  
ON SIMULATED WORK TASKS.(U)  
\*PROTECTIVE CLOTHING

EFFECTS OF VARIOUS AD-628 367  
GASES ON HANDGEAR INSULATION.(U)  
\*PROTECTIVE CLOTHING

EFFICACY OF PRESSURE AD-627 190  
SUIT COOLING SYSTEMS IN HOT  
ENVIRONMENTS.(U)  
\*PRESSURE SUITS

EFFICACY OF VENTILATING AD-726 076  
SYSTEMS.(U)  
\*FLIGHT CLOTHING

EMERGENCY BREATHING AND AD-608 088  
SUIT PRESSURIZATION SYSTEM.(U)  
\*LIFE SUPPORT

ENGINEERING DESIGN AD-680 826  
STUDY OF A SPACE SUIT WITH AN  
INTEGRATED ENVIRONMENTAL CONTROL  
SYSTEM.(U)  
\*PRESSURE SUITS

ENGINEERING RESEARCH AD-666 226  
PROTOTYPE DISTRIBUTION SYSTEMS FOR  
THERMALIBRIUM CLOTHING.(U)  
\*PROTECTIVE CLOTHING

ENGINEERING TEST OF AD-835 549  
BOOT, COMBAT, MOUNTAIN AND SKI.(U)  
\*PROTECTIVE CLOTHING

ENGINEERING TEST OF AD-850 180  
CLOTHING SYSTEM (SUMMER UNIFORM)  
FOR ARMY AVIATION CREW MEMBERS.(U)  
\*FLIGHT CLOTHING

ENGINEERING TEST OF AD-856 438  
FUNCTIONAL SUMMER UNIFORM FOR  
ARMORED VEHICLE CREWMEN.(U)  
\*FIRE PROTECTIVE CLOTHING

ENGINEERING TEST OF AD-835 403  
JUNGLE HAT WITH HEADNET.(U)  
\*PROTECTIVE CLOTHING

ENGINEERING TEST OF AD-732 429  
LIGHTWEIGHT UNDERWEAR OF THE WINTER  
FLIGHT CLOTHING SYSTEM: THERMAL  
PROTECTION.(U)  
\*TEXTILES

ENGINEERING TEST OF AD-817 192  
PONCHO, LIGHTWEIGHT (LINCLOE).(U)  
\*PROTECTIVE CLOTHING

ENGINEERING TEST OF AD-862 006  
PROTECTIVE HELMET SPH-4.(U)  
\*HELMETS

ENGINEERING TEST OF AD-474 980  
SPIKE RESISTANT INSOLE.(U)  
\*SHOES

EVALUATION CRITERIA FOR AD-884 560  
HEATED DIVER SUIT SYSTEMS.(U)  
\*SCUBA DIVERS

EVALUATION FOR SERVICE AD-663 634  
USE OF A PROTO-TYPE SWIMMER'S  
RESCUE SUIT.(U)  
\*SEA RESCUES

EVALUATION OF A DIVER'S AD-705 064  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.(U)  
\*UNDERWATER CLOTHING

EVALUATION OF A WET AD-658 508

T-4

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

EVA-FER

SUIT IN CONJUNCTION WITH ANTI- BLACKOUT PROTECTION.(U)		FOAMED NEOPRENE DIVER'S WET SUIT AS A SURVIVAL GARMENT FOR HELICOPTER AIRCREWS.(U)	
*PRESSURE SUITS		*AIR SEA RESCUES	
EVALUATION OF CREW	AD-814 366	EVALUATION OF THE NSRD	AD-694 023
MEMBER'S IMPROVED FIRE RESISTANT FLIGHT COVERALLS.(U)		HEATER PUMP PERFORMANCE CHARACTERISTICS AND RELIABILITY.(U)	
*FIRE PROTECTIVE CLOTHING		*UNDERWATER CLOTHING	
EVALUATION OF FIRE	AD-764 935	EVAPORATIVE COOLING OF	AD-740 738
RETARDANT FABRICS.(U)		MEN IN WET CLOTHING.(U)	
*FIRE PROTECTIVE CLOTHING		*PROTECTIVE CLOTHING	
EVALUATION OF FIRE	AD-826 388	EXPERIMENTAL SPACE	AD-738 088
RETARDANT FLIGHT GLOVES(NOMEX). (ACA-63/671).(U)		WORKER'S GARMENT AND HELMET ASSEMBLY.(U)	
*GLOVES		*PROTECTIVE CLOTHING	
EVALUATION OF HEAT LOSS	AD-747 276	EXPLORATORY DEVELOPMENT	AD-720 275
FROM NAVY DIVERS' WET SUIT.(U)		OF PARTIAL PRESSURE HELMET AND MOBILITY JOINTS FOR EMERGENCY PRESSURE SUIT OUTFITS.(U)	
*UNDERWATER CLOTHING		*PRESSURE SUITS	
EVALUATION OF IMPROVED	AD-838 982	EXPLORATORY DEVELOPMENT	AD-711 676
EXHALATION VALVE FOR HGU-8/P FLYING HELMET.(U)		OF PRESSURE SUIT MOBILITY JOINTS, GLOVES AND HELMET.(U)	
*HELMETS		*PRESSURE SUITS	
EVALUATION OF	AD-989 928	FABRIC-PROTECTORS.(U)	AD-781 309
LIGHTWEIGHT DEEP SEA DIVING DRESS.(U)		*FABRICS	
*UNDERWATER CLOTHING		FEASIBILITY STUDY AND	AD-670 212
EVALUATION OF HARNESSED	AD-842 833	CONCEPTUAL DESIGN FOR A PERSONAL THERMAL CONDITIONING SYSTEM.(U)	
ORBITING LABORATORY DESIGN DEFINITION PRESSURE GARMENTS.(U)		*PROTECTIVE CLOTHING	
*PRESSURE SUITS		FIELD EVALUATION OF	AD-663 886
EVALUATION OF MODIFIED	AD-777 740	MODIFIED SUBMARINE RESCUE AND ESCAPE SUITS.(U)	
DIVERS' DRESS.(U)		*SUBMARINE ESCAPE	
*DIVER EQUIPMENT		FINGER DEXTERITY OF THE	AD-603 705
EVALUATION OF ONE PIECE	AD-669 230	PRESSURE-SUITED SUBJECT.(U)	
WET SUIT.(U)		*AEROSPACE MEDICINE	
*UNDERWATER CLOTHING		FIRE FIGHTER'S EXPOSURE	AD-722 774
EVALUATION OF SWIMMER	AD-886 843	STUDY.(U)	
EXPOSURE SUITS IN SUBFREEZING WATERS.(U)		*AVIATION FUELS	
*EXPOSURE SUITS			
AN EVALUATION OF THE	AD-637 153		

T-5  
UNCLASSIFIED

/ZOM08

FLA-IMP

UNCLASSIFIED

FLAME PROTECTION AFFORDED MICE BY A NONCOMBUSTIBLE GARMENT IN 100% OXYGEN ATMOSPHERES.(U) *FIRE PROTECTIVE CLOTHING	AD-665 833	GARMENTS, OUTER (WET WEATHER).(U) *PROTECTIVE CLOTHING	AD-755 643
FLAME-RETARDANT CLOTHING AND TEXTILE ITEMS FOR USE IN OXYGEN-ENRICHED ENVIRONMENTS OF DECOMPRESSION CHAMBERS.(U) *FIRE PROTECTIVE CLOTHING	AD-779 886	HEAT TRANSFER THROUGH FABRICS.(U) *TEXTILES	AD-712 505
FLEET EVALUATION - COVERALLS, FLYING, SUMMER, FIRE RESISTANT, POLYAMIDE, TYPE CS-FRP- 1.(U) *FLIGHT CLOTHING	AD-667 718	HEIGHT-WEIGHT SIZING OF PROTECTIVE GARMENTS, BASED ON JAPANESE AIR SELF-DEFENSE FORCE PILOT DATA, WITH FIT-TEST RESULTS.(U) *PROTECTIVE CLOTHING	AD-606 039
FLOW OF HEAT AND VAPOR THROUGH COMPOSITE PERM-SELECTIVE MEMBRANES UNDER SIMULATED CONDITIONS.(U) *PROTECTIVE CLOTHING	AD-671 681	HIGH-ALTITUDE PRESSURE SUITS AND HERMETICALLY SEALED CABINS FOR STRATOSPHERIC FLIGHTS.(U) *PRESSURE SUITS	AD-458 909
FLOW OF HEAT AND WATER VAPOR THROUGH PROTECTIVE CLOTHING.(U) *PROTECTIVE CLOTHING	AD-712 994	HOODS, PROTECTIVE.(U) *PROTECTIVE CLOTHING	AD-719 113
FOAMED-IN-PLACE HELMET.(U) *HELMETS	AD-902 273	HUMAN FACTORS EVALUATION OF SUBMARINE ESCAPE: II- A. TOP EGRESS WITH THE BRITISH SUBMARINE ESCAPE IMMERSION SUIT AND THE STEINKE HOOD.(U) *SUBMARINE ESCAPE	AD-730 711
FOOTWEAR FOR INUNDATED AREAS.(U) *FEET	AD-766 684	HUMAN FACTORS STUDY OF GMC CLOTHING AND EQUIPMENT DURING COLD WEATHER TESTS OF THE PERSHING MISSILE SYSTEM.(U) *SURFACE TO SURFACE MISSILES	AD-701 872
FULL PRESSURE SUIT FOR SPACE CREWS.(U) *PRESSURE SUITS	AD-839 425	HUMAN FACTORS STUDY OF GMC CLOTHING AND EQUIPMENT DURING COLD WEATHER TESTS OF THE SERGFANT MISSILE SYSTEM, II.(U) *SURFACE TO SURFACE MISSILES	AD-701 864
FUNCTIONAL SPECIAL CLOTHING FOR BUILDERS.(U) *PROTECTIVE CLOTHING	AD-742 816	HYDROSPACE SIMULATOR FACILITY FOR MATERIALS TESTING.(U) *TEST FACILITIES	AD-739 695
*G(Z) PROTECTION AFFORDED BY STANDARD AND PREACCELERATION INFLATIONS OF THE BLADDER AND CAPSTAN TYPE G- SUITS.(U) *ACCELERATION TOLERANCE	AD-761 779	IMPREGNATION PLANT IMPROVEMENT TESTS.(U) *PROTECTIVE CLOTHING	AD-723 549

T-6  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

INT-400

INTEGRATED BACK-PACK AD-609 286  
MANEUVERING UNIT PROPULSION STUDY  
AND EXHAUST PLUME HEATING  
ANALYSIS.(U)  
\*ASTRONAUTS

INTEGRATED MANEUVERING AD-714 577  
LIFE SUPPORT SYSTEM.(U)  
\*PRESSURE SUITS

INVESTIGATION AND AD-672 758  
RECOMMENDATIONS CONCERNING  
PROTECTIVE CLOTHING AND EQUIPMENT  
FOR NAVY PERSONNEL ON FLIGHT AND  
HANGAR DECKS OF AIRCRAFT  
CARRIERS.(U)  
\*PROTECTIVE CLOTHING

INVESTIGATION OF AD-733 312  
METHODS FOR IMPROVING THE  
FRICTIONAL PROPERTIES OF RUBBER  
COMPOUNDS USED IN FOOTWEAR.(U)  
\*SHOES

INVESTIGATION OF THE AD-636 398  
PERFORMANCE OF AN OPEN-FLAME  
CONVECTOR.(U)  
\*HEATERS

INVESTIGATION OF AD-702 124  
VIBRATION AND IMPACT PROTECTION OF  
THE HUMAN HEAD AND NECK.(U)  
\*HELMETS

INVESTIGATIONS OF HEAT AD-691 144  
AND MASS (WATER VAPOR AND LIQUID)  
MOVEMENT THROUGH CLOTHING  
SYSTEMS.(U)  
\*PROTECTIVE CLOTHING

A LABORATORY COMPARISON AD-722 857  
OF THREE METHODS OF PERSONAL  
CONDITIONING.(U)  
\*FLIGHT CLOTHING

LABORATORY SHRINKAGE AD-657 853  
EVALUATION OF NOMEX SUMMER FLIGHT  
SUITS.(U)  
\*FLIGHT CLOTHING

MANIKIN MEASUREMENTS OF AD-676 885

THE NOISE ATTENUATION PROVIDED BY  
FLIGHT HELMETS.(U)  
\*ANTHROPOMETRY

METABOLIC MECHANISMS OF AD-689 937  
MAN IN THE FULL PRESSURE SUIT.  
PHYSIOLOGICAL COST OF DOWNING A  
FULL PRESSURE SUIT.(U)  
\*METABOLISM

METEOROID THREAT TO AD-691 461  
EXTRAVEHICULAR SPACE SUIT  
ASSEMBLIES.(U)  
\*EXTRAVEHICULAR ACTIVITY

A METHOD AND RATING AD-846 419  
SYSTEM FOR EVALUATION OF THERMAL  
PROTECTION.(U)  
\*PROTECTIVE CLOTHING

A METHOD OF RELATING AD-672 876  
PHYSIOLOGY AND MILITARY  
PERFORMANCE: A STUDY OF SOME  
EFFECTS OF VAPOR BARRIER CLOTHING  
IN A HOT CLIMATE.(U)  
\*PROTECTIVE CLOTHING

METHODS OF SANITIZING AD-689 164  
AND DEODORIZING RUBBERIZED FABRIC  
AND PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.(U)  
\*RUBBER COATINGS

MICROCLIMATE-CONTROLLED AD-713 581  
(THERMALIBRIUM) CLOTHING SYSTEMS  
FOR MILITARY APPLICATIONS.(U)  
\*PROTECTIVE CLOTHING

MICROCLIMATE-CONTROLLED AD-682 715  
(THERMALIBRIUM) PROTECTIVE CLOTHING  
SYSTEM FOR MILITARY  
APPLICATIONS.(U)  
\*PROTECTIVE CLOTHING

MOBILITY OF PRESSURE- AD-626 979  
SUITED SUBJECTS UNDER WEIGHTLESS  
AND LUNAR GRAVITY CONDITIONS.(U)  
\*WEIGHTLESSNESS

MODERN COUNTER- AD-713 573  
SURVEILLANCE IN COMBAT CLOTHING.(U)

T-7  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

NOI-PRE

\*PROTECTIVE CLOTHING

MOISTURE TRANSFER AD-665 042  
THROUGH IMPERMEABLE FOAM  
INSULATIONS.(U)

\*PROTECTIVE CLOTHING

NOL ZERO 8 DEVELOPMENT AD-856 542  
TEST REPORT. DD FORM 1423 DATA  
ITEM UT-(110).(U)

\*MANNED SPACECRAFT

MOMENTS OF INERTIA AND AD-609 863  
CENTERS OF GRAVITY OF THE LIVING  
HUMAN BODY ENCUMBERED BY A FULL-  
PRESSURE SUIT.(U)

\*ASTRONAUTS

NAVAL APPLICATIONS OF AD-863 709  
MAN-IN-THE-SEA CONCEPTS - MISSION  
DEFINITION.(U)

\*NAVAL OPERATIONS

NONFLAMMABLE PBI AD-880 047  
FABRICS FOR PROTOTYPE AIR FORCE  
FLIGHT SUITS.(U)

\*FIRE RESISTANT TEXTILES

OPERATIONAL AD-819 324  
CHARACTERISTICS OF THE 1964  
EXTRAVEHICULAR RESEARCH MODEL FULL  
PRESSURE ASSEMBLY.(U)

\*PRESSURE SUITS

THE OUTFITTING OF THE AD-682 156  
PILOT AND THE COSMONAUT.(U)

\*PROTECTIVE CLOTHING

PASSIVE THERMAL CONTROL AD-714 224  
SYSTEMS FOR ADVANCED SPACE SUIT  
CONCEPTS.(U)

\*PRESSURE SUITS

PHYSIOLOGICAL EFFECTS AD-663 907  
OF DIFFERENT OXYGEN FLOW RATES AND  
AMBIENT TEMPERATURES ON PRESSURE-  
SUITED SUBJECTS PERFORMING WORK AT  
ALTITUDE.(U)

\*PRESSURE SUITS

PHYSIOLOGICAL EFFECTS AD-773 828

OF WEARING THE FIRE PROXIMITY SUIT  
ON CRASH TRUCK ALERT STATUS TO HOT-  
DRY AND HOT-HUMID ENVIRONMENTS.(U)

\*FIRE FIGHTING

PHYSIOLOGICAL AD-734 136  
EVALUATION OF A COMMERCIALY  
AVAILABLE ABANDON-SHIP SURVIVAL  
SUIT.(U)

\*EXPOSURE SUITS

PHYSIOLOGICAL AD-684 479  
EVALUATION OF A FREE-FLOODING DIVER  
HEAT REPLACEMENT GARMENT.(U)

\*DIVING

PHYSIOLOGICAL AD-690 890  
EVALUATION OF EFFECTS ON PERSONNEL  
WEARING THE MICROWAVE PROTECTIVE  
SUIT AND OVERGARMENT.(U)

\*PROTECTIVE CLOTHING

PHYSIOLOGICAL AD-724 617  
EVALUATION OF SUBJECTS EXPOSED TO A  
COLD WATER ENVIRONMENT WHILE  
WEARING DIFFERENT PROTECTIVE SUIT  
ASSEMBLIES.(U)

\*UNDERWATER CLOTHING

PHYSIOLOGICAL AD-668 809  
EVALUATION OF THE BRITISH MARK VII  
SUBMARINE ESCAPE IMMERSION SUIT  
DURING IMMERSION.(U)

\*UNDERWATER CLOTHING

A PORTABLE TEST BATTERY AD-680 825  
FOR COMPARATIVELY EVALUATING  
OPERATOR PERFORMANCE IN FULL-  
PRESSURE SUIT ASSEMBLIES.(U)

\*PRESSURE SUITS

PRELIMINARY STUDIES ON AD-652 207  
A NEW PARTIAL-PRESSURE SUIT  
CONCEPT.(U)

\*PRESSURE SUITS

PRELIMINARY SURVEY OF AD-729 664  
DIVER ANTHROPOMETRICS.(U)

\*ANTHROPOMETRY

PRESSURE SEALING AD-658 204

T-8  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

PRI-A R

CLOSURES FOR FULL PRESSURE PROTECTIVE SUIT ASSEMBLIES.(U) *PRESSURE SUITS		RESEARCH AND DEVELOPMENT OF PLAST PROTECTIVE FOOTWEAR, FABRICATION AND PROOFTESTING.(U) *SHOES	AD-648 417
PRINCIPLES OF THE BOYLE'S LAW EMERGENCY PRESSURE SUIT AND THEIR APPLICATION.(U) *PRESSURE SUITS	AD-685 720	RESEARCH AND DEVELOPMENT OF EXTRAVEHICULAR PROTECTIVE ASSEMBLY.(U) *EXTRAVEHICULAR ACTIVITY	AD-647 197
PROCEEDINGS OF THE SYMPOSIUM ON INDIVIDUAL COOLING, MARCH 17-18, 1969.(U) *PROTECTIVE CLOTHING	AD-694 130	RESEARCH AND DEVELOPMENT OF HELMET FACEPIECES FOR SPACE PROTECTIVE ASSEMBLIES.(U) *PRESSURE SUITS	AD-652 248
PROGRESS REPORT ON THE DAMAGE CONTROL SUIT SYSTEM.(U) *PROTECTIVE CLOTHING	AD-726 698	RESEARCH AND DEVELOPMENT ON A PASSIVELY PRESSURIZED FLIGHT UNIFORM.(U) *PRESSURE SUITS	AD-702 537
PROJECT COLD CASE.(U) *FLIGHT CLOTHING	AD-462 767	RESEARCH AND FEASIBILITY STUDIES ON CLOTHING AND DECONTAMINATION.(U) *CHEMICAL WARFARE AGENTS	AD-876 647
PROTECTION OF AIRCREWS FROM HIGH TEMPERATURES; USE OF A WATER-COOLED GARMENT FOR HEAT BALANCE STUDIES IN MAN.(U) *PROTECTIVE CLOTHING	AD-727 222	RESEARCH ON ACOUSTICAL PROBLEMS OF THE MILITARY: A REVIEW AND FUTURE ASPECT.(U) *ACOUSTICS	AD-680 165
PROTECTIVE CLOTHING AND LIFE SUPPORT EQUIPMENT FOR EXPLOSIVE ORDNANCE DISPOSAL PERSONNEL.(U) *BOMBS	AD-682 730	RESEARCH ON CLOSED-CELL SPONGE AS A PRESSURE TECHNIQUE FOR PROTECTIVE ASSEMBLIES.(U) *PROTECTIVE CLOTHING	AD-652 653
A PROTECTIVE PASSENGER SMOKE HOOD.(U) *FIRE PROTECTIVE CLOTHING	AD-657 436	RESEARCH TO ADVANCE EXTRAVEHICULAR PROTECTIVE TECHNOLOGY.(U) *EXTRAVEHICULAR ACTIVITY	AD-818 964
PROTECTIVE SMOKE HOOD STUDIES.(U) *PROTECTIVE COVERINGS	AD-727 021	RESPIRATORY AND MICROCLIMATE TEMPERATURES WITHIN THE PARKA HOOD IN EXTREME COLD.(U) *PROTECTIVE CLOTHING	AD-608 139
QUICK DOWNING FLIGHT BOOT.(U) *FLIGHT CLOTHING	AD-835 066	REVERSE PRESSURE EFFECT ON SUIT DEMAND REGULATOR.(U) *MANNED SPACECRAFT	AD-856 673
REACTIVITY OF VARIOUS DAMAGE CONTROL PROTECTIVE CLOTHING MATERIALS WITH CHLORINE TRIFLUORIDE.(U) *PROTECTIVE CLOTHING	AD-646 062	A REVIEW OF AVAILABLE	AD-768 313

T-4  
UNCLASSIFIED

/ZOMOB



A R-STU

UNCLASSIFIED

HEATED WET-SUIT PROTECTION FOR DIVERS AND SWIMMERS.(U) *DIVING	AD-614 241	SLIP NET MOBILITY JOINTS FOR PRESSURE SUITS.(U) *SPACE ENVIRONMENTS	AD-848 605
A REVIEW OF CURRENT CONCEPTS AND PRACTICES USED TO CONTROL BODY HEAT LOSS DURING WATER IMMERSION.(U) *PROTECTIVE CLOTHING	AD-614 241	SOME EFFECTS OF ABSORBENCY OF CLOTHING MATERIALS.(U) *PROTECTIVE CLOTHING	AD-655 147
A ROCKET PROPELLANT HANDLER'S SUIT FOR PROTECTION FROM CHLORINE TRIFLUORIDE AND ELEMENTAL FLUORINE.(U) *PROTECTIVE CLOTHING	AD-731 556	SOUND ATTENUATION CHARACTERISTICS OF THE PROJECT MERCURY PRE-PRODUCTION FULL PRESSURE SUIT HELMET.(U) *HELMETS	AD-622 197
ROCKET PROPELLANT HANDLER'S SUIT.(U) *PROTECTIVE CLOTHING	AD-876 932	SOVIET HIGH ALTITUDE EQUIPMENT FOR AIRCREW PROTECTION.(U) *AEROSPACE CRAFT	AD-642 178
SEALAB III - DIVER'S ISOTOPIIC SWIMSUIT-HEATER SYSTEM.(U) *UNDERWATER CLOTHING	AD-700 680	SPACE CLOTHING OF SUBJUGATORS OF OUTER SPACE.(U) *PRESSURE SUITS	AD-620 099
SECOND SERIES U.S. RUBBER COMPANY LIGHTWEIGHT DIVING OUTFITS WITH AIRLINE AND DEMAND SUPPLY.(U) *UNDERWATER CLOTHING	AD-893 971	SPACE SUITS - SPACE FASHION (RAUMANZURGE - MODE DES KOSMOS).(U) *PRESSURE SUITS	AD-823 299
SENSIBLE HEAT TRANSFER IN THE GEMINI AND APOLLO PRESSURE SUITS.(U) *PRESSURE SUITS	AD-647 828	SPECIAL SAFETY STUDY. TESTING 'NOMEX' MATERIAL AS HEAT RESISTANT CLOTHING FOR INDUSTRIAL APPLICATION.(U) *FIRE RESISTANT TEXTILES	AD-664 122
SERVICE TEST OF FUNCTIONAL UNIFORM FOR ARMORED VEHICLE CREWMEN (SUMMER).(U) *PROTECTIVE CLOTHING	AD-856 281	STORAGE OF CHEMICAL AGENTS (I). SPECIAL CLOTHING FOR WORKING IN WAREHOUSES (II).(U) *CHEMICAL WARFARE AGENTS	AD-841 293
SERVICE TEST OF FUNCTIONAL UNIFORM FOR ARMORED VEHICLE CREWMEN (WINTER).(U) *EXPOSURE SUITS	AD-856 632	STUDY AND DEVELOPMENT OF MATERIALS AND TECHNIQUES FOR PASSIVE THERMAL CONTROL OF FLEXIBLE EXTRAVEHICULAR SPACE GARMENTS.(U) *TEMPERATURE CONTROL	AD-624 886
SLEEPING PROTECTION FOR WARM AND COOL ENVIRONMENTS; THE EFFECT OF UTILIZING AN ATTACHABLE PONCHO LINER.(U) *CLOTHING	AD-701 874	STUDY OF HUMAN PERFORMANCE IN A MARK IV PRESSURE SUIT.(U) *PRESSURE SUITS	AD-619 029

T-10  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

A S-USE

A STUDY OF SEAM LEAKAGE AD-708 874  
IN COATED FABRICS.(U)  
\*TEXTILES

A STUDY OF TECHNIQUES AD-635 206  
AND EQUIPMENT FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE  
GARMENTS.(U)  
\*ASTRONAUTS

SURVEY OF THERMAL AD-687 149  
CONTROL TECHNIQUES FOR  
EXTRAVEHICULAR SPACE SUITS.(U)  
\*PRESSURE SUITS

TACTICAL IMPLICATIONS AD-713 530  
OF THE PHYSIOLOGICAL STRESS IMPOSED  
BY CHEMICAL PROTECTIVE CLOTHING  
SYSTEMS.(U)  
\*PROTECTIVE CLOTHING

A TECHNIQUE FOR OPTIMAL AD-718 327  
FITTING OF FLIGHT HELMETS.(U)  
\*EAR PROTECTORS

TECHNIQUES AND AD-666 940  
MATERIALS FOR PASSIVE THERMAL  
CONTROL OF RIGID AND FLEXIBLE  
EXTRAVEHICULAR SPACE ENCLOSURES.(U)  
\*PRESSURE SUITS

TEST AND EVALUATION OF AD-822 047  
U. S. AIR FORCE EXPERIMENTAL  
CUTAWAY TYPE ANTI-BLACKOUT SUITS  
DESIGNATED MA-1.(U)  
\*BLACKOUT(PHYSIOLOGY)

THE TESTING OF THERMAL AD-729 362  
PROTECTIVE CLOTHING IN A  
REPRODUCIBLE FUEL FIRE ENVIRONMENT,  
A FEASIBILITY STUDY.(U)  
\*FIRE PROTECTIVE CLOTHING

THEORETICAL THERMAL AD-694 013  
REQUIREMENTS FOR THE MARK II DIVING  
SYSTEM.(U)  
\*UNDERWATER CLOTHING

THERMAL BALANCE OF MEN AD-770 378  
UNDER ATROPINE THERAPY WEARING  
CHEMICAL PROTECTIVE CLOTHING.(U)

\*ATROPINE

THERMAL EVALUATION OF A AD-678 375  
POLYVINYLCHLORIDE EXPOSURE SUIT  
(EMPRESS) AND COMPARISON WITH  
PRESENT SUBMARINE DECK EXPOSURE  
SUIT.(U)  
\*EXPOSURE SUITS

THERMAL-PHYSICAL AD-631 295  
PARAMETERS OF MATERIALS.(U)  
\*PROTECTIVE CLOTHING

THERMAL PROTECTION AD-885 575  
CAPACITY OF THE A/P225-4 HIGH  
ALTITUDE FLYING OUTFIT.(U)  
\*FLIGHT CLOTHING

THERMOELECTRIC HEATING AD-737 720  
AND VENTILATING SYSTEM.(U)  
\*PROTECTIVE CLOTHING

TIMED HEAT-RELEASE AD-647 592  
CHEMICAL SYSTEM FOR UNDERWATER  
APPLICATIONS; THERMAL CREAM WARMS  
DIVERS AND DOWNED PILOTS IN  
OCEAN.(U)  
\*PROTECTIVE COVERINGS

TROPICAL COMBAT UNIFORM AD-815 865  
(PONCHOS AND GROUND CLOTHS).(U)  
\*PROTECTIVE CLOTHING

TROPIC SERVICE TEST OF AD-857 571  
FUNCTIONAL UNIFORM FOR ARMORED  
VEHICLE CREWMEN.(U)  
\*ARMORED VEHICLES

UH-1 DOOR GUNNER AD-782 112  
PROTECTION.(U)  
\*PROTECTIVE CLOTHING

THE USE OF LINES OF AD-810 519  
NONEXTENSION TO IMPROVE MOBILITY IN  
FULL-PRESSURE SUITS.(U)  
\*PRESSURE SUITS

USER EVALUATIONS OF TWO AD-674 184  
AIRCRAFT PROTECTIVE HELMETS.(U)  
\*FLIGHT CREWS

T-11

UNCLASSIFIED

/ZOM08

## UNCLASSIFIED

VAR-ZOO

VARIABLE THERMAL AD-668 765 \*PRESSURE SUITS  
CONDUCTIVITY HEAT TRANSFER RESEARCH  
FOR PERSONAL PROTECTIVE  
ASSEMBLIES.(U)  
\*PRESSURE SUITS

VENTILATED FLIGHT AD-644 611  
SUIT.(U)  
\*FLIGHT CLOTHING

VENTILATING BACKPACK AD-748 838  
FOR THE SUIT SYSTEM, TOXICOLOGICAL  
PROTECTIVE MICRO-CLIMATE CONTROLLED  
(CB PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).(U)  
\*COOLING + VENTILATING EQUIPMENT

VENTILE ANTI-EXPOSURE AD-838 627  
SUIT.(U)  
\*EXPOSURE SUITS

VORTEX TUBE AS A AD-705 455  
THERMAL PROTECTIVE DEVICE.(U)  
\*AVIATION PERSONNEL

WATER COOLED HOOD AD-724 020  
AFFECTS CREATIVE PRODUCTIVITY.(U)  
\*PERFORMANCE(HUMAN)

\*WET\* VERSUS \*DRY\* SUIT AD-638 092  
APPROACHES TO WATER IMMERSION  
PROTECTIVE CLOTHING.(U)  
\*PROTECTIVE CLOTHING

WILEY POST: FIRST TEST AD-616 952  
OF HIGH ALTITUDE PRESSURE SUITS IN  
THE UNITED STATES.(U)  
\*PRESSURE SUITS

WINDBLAST TEST OF HIGH- AD-877 249  
ALTITUDE FLYING OUTFIT A/P225-4.(U)  
\*FLIGHT CLOTHING

WORK CLOTHES.(U) AD-688 057  
\*PROTECTIVE CLOTHING

X-20A FULL-PRESSURE AD-603 701  
SUIT QUANTITATIVE PERFORMANCE.(U)  
\*AEROSPACE MEDICINE

ZOOM BAG SCENARIO.(U) AD-697 455

T-12  
UNCLASSIFIED /ZOM08

UNCLASSIFIED

PERSONAL AUTHOR INDEX

- ALBRIGHT, JOHN D.  
• • •  
THE TESTING OF THERMAL PROTECTIVE  
CLOTHING IN A REPRODUCIBLE FUEL  
FIRE ENVIRONMENT, A FEASIBILITY  
STUDY.  
AD-729 362
- ALEXANDER, MILTON  
• • •  
WEIGHT-WEIGHT SIZING OF PROTECTIVE  
GARMENTS, BASED ON JAPANESE AIR  
SELF-DEFENSE FORCE PILOT DATA, WITH  
FIT-TEST RESULTS.  
AD-606 039
- ANTHROPOMETRIC DIMENSIONS OF AIR  
FORCE PRESSURE-SUITED PERSONNEL FOR  
WORKSPACE AND DESIGN CRITERIA.  
AD-697 022
- ZOOM BAG SCENARIO,  
AD-697 455
- ANTHROPOLOGICAL APPLICATIONS IN  
HIGH ALTITUDE FLIGHT SYSTEMS.  
AD-706 888
- ALLAN, J. R.  
• • •  
A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING.  
AD-722 857
- ALLNUTT, M. F.  
• • •  
A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING.  
AD-722 857
- ASSAF, JOSEPH E.  
• • •  
DEVELOPMENT OF LIGHTWEIGHT (COLD-  
WET) INSULATED FOOTWEAR.  
AD-766 690
- AUDEY, NORMAN F.  
• • •  
PROGRESS REPORT ON THE DAMAGE  
CONTROL SUIT SYSTEM.  
AD-726 698
- • •  
DEVELOPMENT AND EVALUATION OF AN  
OXYGEN-SENSING WARNING DEVICE.  
AD-735 377
- • •  
HYDROSPACE SIMULATOR FACILITY FOR  
MATERIALS TESTING.  
AD-739 698
- • •  
DAMAGE CONTROL SUIT SYSTEM.  
AD-762 428
- • •  
DEVELOPMENT AND EVALUATION OF DEEP-  
SEA SWIMSUIT MATERIALS.  
AD-763 378
- AUSTIN, GEORGE B.  
• • •  
EVALUATION CRITERIA FOR HEATED  
DIVER SUIT SYSTEMS.  
AD-884 560
- AUSTIN, HARRY W.  
• • •  
ENGINEERING RESEARCH PROTOTYPE  
DISTRIBUTION SYSTEMS FOR  
THERMALBATH CLOTHING.  
AD-666 226
- BALENTINE, DOYLE E.  
• • •  
FOAMED-IN-PLACE HELMET.  
AD-902 273
- BAYLES, JOHN J.  
• • •  
SEALAB III - DIVER'S ISOTOPIC  
SWIMSUIT-HEATER SYSTEM.  
AD-708 680
- BEAGLES, J. A.  
• • •  
DIVERS' BODY HEAT LOSS: DESCRIBES  
A STUDY OF THE ENDURANCE OF  
UNDERWATER SWIMMERS WEARING A  
VARIETY OF FOAM NEOPRENE WET SUITS  
AND IMMersed AT 30-32F IN THE NEL  
ARCTIC POOL.  
AD-652 405
- BEAGLES, JOHN A.

UNCLASSIFIED

BEA-BON

AD 400 COMMITTEE REPORT.  
AD-699 170

•BEATTY, HUGH T. • • •

PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.  
AD-759 664

•BECKER, JACK M. • • •

ENGINEERING TEST OF FUNCTIONAL  
SUMMER UNIFORM FOR ARMORED VEHICLE  
CREWMEN.  
AD-856 438

•BECKMAN, E. L. • • •

A REVIEW OF CURRENT CONCEPTS AND  
PRACTICES USED TO CONTROL BODY HEAT  
LOSS DURING WATER IMMERSION.  
AD-614 241

CURRENT CONCEPTS AND PRACTICES  
APPLICABLE TO THE CONTROL OF BODY  
HEAT LOSS IN AIRCREW SUBJECTED TO  
WATER IMMERSION.  
AD-636 052

'WET' VERSUS 'DRY' SUIT APPROACHES  
TO WATER IMMERSION PROTECTIVE  
CLOTHING.  
AD-638 092

•BECKMAN, EDWARD L. • • •

AN EVALUATION OF THE FORMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCREWS.  
AD-637 153

•BEENY, M. • • •

A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING.  
AD-722 857

•BELSKII, B. L. • • •

SOVIET HIGH ALTITUDE EQUIPMENT FOR  
AIRCREW PROTECTION.  
AD-642 178

•BERGEN, GAIL A. • • •

A ROCKET PROPELLANT HANDLER'S SUIT  
FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL FLUORINE.  
AD-731 586

•BERGHAGE, THOMAS E. • • •

PRELIMINARY SURVEY OF DIVER  
ANTHROPOMETRICS.  
AD-729 664

•BERNARD, A. M. • • •

THERMOELECTRIC HEATING AND  
VENTILATING SYSTEM.  
AD-737 720

•BERNARD, ANDREW M. • • •

DEVELOPMENT OF THERMOELECTRIC  
HEATING AND VENTILATING SYSTEM.  
AD-644 917

•BIEN, ALBERT • • •

NAVAL APPLICATIONS OF MAN-IN-THE-  
SEA CONCEPTS - MISSION DEFINITION.  
AD-663 709

•BONDI, KENNETH R. • • •

PHYSIOLOGICAL EVALUATION OF A FREE-  
FLOODING DIVER HEAT REPLACEMENT  
GARMENT.  
AD-684 479

THEORETICAL THERMAL REQUIREMENTS  
FOR THE MARK II DIVING SYSTEM.  
AD-694 013

EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.  
AD-706 064

UNCLASSIFIED

BOW-802

•BOWEN, J. D.  
• • •  
X-204 FULL-PRESSURE SUIT  
QUANTITATIVE PERFORMANCE.  
AD-643 701  
• • •  
BACKGROUND AND DEVELOPMENT OF  
BOYLE'S LAW ALTITUDE SUITS.  
AD-761 797  
•BOWEN, J. DONALD  
• • •  
EVALUATION OF MANNED ORBITING  
LABORATORY DESIGN DEFINITION  
PRESSURE GARMENTS.  
AD-842 833  
•BOYD, H. D.  
• • •  
FULL PRESSURE SUIT FOR SPACE CREWS.  
AD-839 425  
•BOYLE, JOSEPH, III  
• • •  
PRELIMINARY STUDIES ON A NEW  
PARTIAL-PRESSURE SUIT CONCEPT.  
AD-852 207  
•BRAUDE, G. L.  
• • •  
RESEARCH AND FEASIBILITY STUDIES ON  
CLOTHING AND DECONTAMINATION.  
AD-876 647  
•BRECKENRIDGE, J. R.  
• • •  
'WET' VERSUS 'DRY' SUIT APPROACHES  
TO WATER IMMERSION PROTECTIVE  
CLOTHING.  
AD-638 092  
•BROCKMANN, HAL E.  
• • •  
DEVELOPMENT OF REVISED SIMPLEX  
FABRIC FOR SUMMER FLYING GLOVES.  
AD-636 423  
• • •  
DESIGN OF WOVEN AND LAMINATED  
FABRICS FOR TESTING OF THERMAL  
RESISTANCE.  
AD-638 560

• • •  
DEVELOPMENT OF HIGH-INTENSITY  
THERMAL PROTECTIVE FABRIC.  
AD-659 974

•BROWN, GARY G.  
• • •  
PRESSURE SEALING CLOSURES FOR FULL  
PRESSURE PROTECTIVE SUIT  
ASSEMBLIES.  
AD-658 204

•BUHRING, WILLI J.  
• • •  
EFFECTS OF VARIOUS GASES ON  
HANDGEAR INSULATION.  
AD-628 367

•BURNETT, J. C.  
• • •  
REACTIVITY OF VARIOUS DAMAGE  
CONTROL PROTECTIVE CLOTHING  
MATERIALS WITH CHLORINE  
TRIFLUORIDE.  
AD-646 062

•BURNS, HARVIN  
• • •  
EXPLORATORY DEVELOPMENT OF PRESSURE  
SUIT MOBILITY JOINTS, GLOVES AND  
HELMET.  
AD-711 476

• • •  
EXPLORATORY DEVELOPMENT OF PARTIAL  
PRESSURE HELMET AND MOBILITY JOINTS  
FOR EMERGENCY PRESSURE SUIT  
OUTFITS.  
AD-720 276

•BURTON, RUSSELL R.  
• • •  
•G(2) PROTECTION AFFORDED BY  
STANDARD AND PREACCELERATION  
INFLATIONS OF THE BLADDER AND  
CAPSTAN TYPE G-SUITS.  
AD-761 779

•BUZHARDT, R. E.  
• • •  
EVALUATION OF ONE PIECE WET SUIT.  
AD-669 230

P-3  
UNCLASSIFIED

/ZON08

UNCLASSIFIED

RYN-CRA

•RYNUM, JAMES A.  
 . . .  
 USE- EVALUATIONS OF TWO AIRCREW  
 PROTECTIVE HELMETS.  
 AD-674 144

•BYROM, ROBERT F.  
 . . .  
 SLEEPING PROTECTION FOR WARM AND  
 COOL ENVIRONMENTS: THE EFFECT OF  
 UTILIZING AN ATTACHABLE PONCHO  
 LINER.  
 AD-711 874

•CAMP, JAMES B.  
 . . .  
 QUICK DONNING FLIGHT BOOT.  
 AD-825 166

•CAMP, ROBERT T., JR  
 . . .  
 SOUND ATTENUATION CHARACTERISTICS  
 OF THE PROJECT MERCURY PRE-  
 PRODUCTION FULL PRESSURE SUIT  
 HELMET.  
 AD-622 197

•CARLISLE, C. WALLACE  
 . . .  
 ENGINEERING TEST OF PONCHO,  
 LIGHTWEIGHT (LINCLOE).  
 AD-817 192

•CHADWICK, ARTHUR H.  
 . . .  
 DAMAGE CONTROL SUIT SYSTEM.  
 AD-742 428

•CHANDLER, DONALD R.  
 . . .  
 PRELIMINARY SURVEY OF DIVER  
 ANTHROPOMETRICS.  
 AD-729 664

•EVALUATION OF LIGHTWEIGHT DEEP SEA  
 DIVING DRESS.  
 AD-909 928

•CHIANTA, MARIA A.  
 . . .  
 CAMOUFLAGE PRINTING OF NONEX SUMMER

FLYING COVERALLS.  
 AD-641 247

•DEVELOPMENT OF PRACTICAL HIGH-  
 INTENSITY THERMAL PROTECTION  
 SYSTEMS.  
 AD-709 570

•HEAT TRANSFER THROUGH FABRICS.  
 AD-712 505

•A METHOD AND RATING SYSTEM FOR  
 EVALUATION OF THERMAL PROTECTION.  
 AD-846 419

•CLARK, KIMBLE J.  
 . . .  
 ANALYSIS OF THE THERMAL RESPONSE OF  
 PROTECTIVE FABRICS.  
 AD-759 525

•COIL, E. F.  
 . . .  
 DIVERS' BODY HEAT LOSS: DESCRIBES  
 A STUDY OF THE ENDURANCE OF  
 UNDERWATER SWIMMERS WEARING A  
 VARIETY OF FOAM NEOPRENE WET SUITS  
 AND IMMersed AT 30-32F IN THE NEL  
 ARCTIC POOL.  
 AD-652 405

•CONNOR, THOMAS J.  
 . . .  
 DEVELOPMENT OF A HEATER-PUMP TO  
 PROTECT A DIVER IN COLD WATER.  
 AD-727 606

•COSKREN, ROBERT J.  
 . . .  
 DEVELOPMENT OF PSI FABRIC FOR  
 FLIGHT SUIT WEAR TEST.  
 AD-914 019

•CRAIG, F. N.  
 . . .  
 EVAPORATIVE COOLING OF MEN IN WET  
 CLOTHING.  
 AD-740 738

•THERMAL BALANCE OF MEN UNDER  
 ATROPINE THERAPY WEARING CHEMICAL

UNCLASSIFIED

CRA-DUB

- PROTECTIVE CLOTHING.  
A -770 378
- \*CRAIN, BERRY, JR  
\* \* \*  
DEVELOPMENT OF A PERSONAL COOLING  
SYSTEM FOR EXPLOSIVE ORDNANCE  
DISPOSAL PERSONNEL.  
AD-702 245
- \*CROWELL, C. J., JR  
\* \* \*  
TIMED HEAT-RELEASE CHEMICAL SYSTEM  
FOR UNDERWATER APPLICATIONS:  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.  
AD-447 692
- \*CUMMINGS, E. G.  
\* \* \*  
THERMAL BALANCE OF MEN UNDER  
ATROPINE THERAPY WEARING CHEMICAL  
PROTECTIVE CLOTHING.  
AD-770 378
- \*CURRY, LEROY R., JR.  
\* \* \*  
A STUDY OF TECHNIQUES AND EQUIPMENT  
FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE GARMENTS.  
AD-635 206
- \*CUTHRELL, C.  
\* \* \*  
EVALUATION OF ONE PIECE WET SUIT.  
AD-669 230
- \*DAVIS, JEFFERSON C.  
\* \* \*  
PRELIMINARY STUDIES ON A NEW  
PARTIAL-PRESSURE SUIT CONCEPT.  
AD-652 207
- \*DELAPP, DARWIN  
\* \* \*  
DEVELOPMENT OF LAMINATED FABRIC  
MATERIALS.  
AD-756 457
- \*DERY, DONALD W.  
\* \* \*
- METABOLIC MECHANISMS OF MAN IN THE  
FULL PRESSURE SUIT. PHYSIOLOGICAL  
COST OF DRESSING A FULL PRESSURE  
SUIT.  
AD-609 937
- \*DESIMONE, DAVID N.  
\* \* \*  
FLEET EVALUATION - COVERALLS,  
FLYING, SUMMER, FIRE RESISTANT,  
POLYAMIDE, TYPE CS-FAP-1.  
AD-667 716
- \*DILLON, RICHARD F.  
\* \* \*  
EFFECTIVE LIFE SUPPORT HELMETS.  
AD-636 044
- \*DISCO, N. R.  
\* \* \*  
FEASIBILITY STUDY AND CONCEPTUAL  
DESIGN FOR A PERSONAL THERMAL  
CONDITIONING SYSTEM.  
AD-670 212
- \*DLUGOS, HARL J.  
\* \* \*  
TROPICAL COMBAT UNIFORM (PONCHOS  
AND GROUND CLOTHS).  
AD-616 860
- \*DONNELLY, ROBERT  
\* \* \*  
DEVELOPMENT OF HIGH-INTENSITY  
THERMAL PROTECTIVE FABRIC.  
AD-659 974
- \*DRAKE, N. H., JR  
\* \* \*  
SENSIBLE HEAT TRANSFER IN THE  
GEMINI AND APOLLO PRESSURE SUITS.  
AD-647 620
- \*DUNOIS, DAVID R.  
\* \* \*  
THE TESTING OF THERMAL PROTECTIVE  
CLOTHING IN A REPRODUCIBLE FUEL  
FIRE ENVIRONMENT, A FEASIBILITY  
STUDY.  
AD-754 362

P-5  
UNCLASSIFIED

/ZOMUS



UNCLASSIFIED

DUR-FOR

•HOIS, J.  
\* \* \*  
MOMENTS OF INERTIA AND CENTERS OF  
GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-669 863

•DUNCO, D. WILTSIE  
\* \* \*  
BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS.  
AD-626 619

•DUNHAM, LAWRENCE E.  
\* \* \*  
SERVICE TEST OF FUNCTIONAL UNIFORM  
FOR ARMORED VEHICLE CREWMEN  
(WINTER).  
AD-856 630

•DUSABLON, LOUISE V.  
\* \* \*  
PASSIVE THERMAL CONTROL SYSTEMS FOR  
ADVANCED SPACE SUIT CONCEPTS.  
AD-714 224

•DWYER, J. V.  
\* \* \*  
CANADIAN SELF-CONTAINED DIVING  
EQUIPMENT PERFORMANCE TESTS.  
AD-892 055

•SECOND SERIES U.S. RUBBER COMPANY  
\* \* \*  
LIGHTWEIGHT DIVING OUTFITS WITH  
AIRLINE AND DEMAND SUPPLY.  
AD-893 971

•DWYER, U. V., JR.  
\* \* \*  
COLD WATER PROTECTION UNDER FIELD  
CONDITIONS.  
AD-738 822

•EICHER, MAYNARD  
\* \* \*  
DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.  
AD-727 606

•ELKINS, JAMES W.  
\* \* \*  
AD HOC COMMITTEE REPORT.  
AD-699 170

•ESPOSITO, JOHN J.  
\* \* \*  
DESCRIPTION AND EVALUATION OF A  
PORTABLE DRY-ICE WATER-CONDITIONED  
SUIT SYSTEM FOR AIRCREWMENBERS.  
AD-700 915

•FELDER, J. W.  
\* \* \*  
INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.  
AD-702 124

•FELDER, JOHN W.  
\* \* \*  
VARIABLE THERMAL CONDUCTIVITY HEAT  
TRANSFER RESEARCH FOR PERSONAL  
PROTECTIVE ASSEMBLIES.  
AD-668 765

•FLANNERY, MICHAEL P.  
\* \* \*  
ANTHROPOMETRIC DIMENSIONS OF AIR  
FORCE PRESSURE-SUITED PERSONNEL FOR  
WORKSPACE AND DESIGN CRITERIA.  
AD-697 022

•FONSECA, G. F.  
\* \* \*  
SOME EFFECTS OF ABSORBENCY OF  
CLOTHING MATERIALS.  
AD-655 147

•FONSECA, GEORGE F.  
\* \* \*  
MOISTURE TRANSFER THROUGH  
IMPERMEABLE FOAM INSULATIONS.  
AD-665 042

•FORAN, MICHAEL J.  
\* \* \*  
AD HOC COMMITTEE REPORT.  
AD-699 170

•FORSTALL, JOHN R.

UNCLASSIFIED

POM-CAU

MANIKIN MEASUREMENTS OF THE NOISE  
ATTENUATION PROVIDED BY FLIGHT  
HELMETS.  
AD-476 805

• FOWKES, ROBERT A. • • •

RESEARCH AND DEVELOPMENT ON A  
PASSIVELY PRESSURIZED FLIGHT  
UNIFORM.  
AD-702 537

• FOX, LEONARD J. • • •

DEVELOPMENT OF THERMOELECTRIC  
HEATING AND VENTILATING SYSTEM.  
AD-644 917

• FRASER, A. F. • • •

SLIP NET MOBILITY JOINTS FOR  
PRESSURE SUITS.  
AD-848 606

• FREDERICK, EDWARD B. • • •

A STUDY OF SEAM LEAKAGE IN COATED  
FABRICS.  
AD-708 874

• FRITZ, EUGENE A. • • •

HEIGHT-WEIGHT SIZING OF PROTECTIVE  
GARMENTS, BASED ON JAPANESE AIR  
SELF-DEFENSE FORCE PILOT DATA, WITH  
FIT-TEST RESULTS.  
AD-616 039

• FUJINAKA, E. S. • • •

RESEARCH AND DEVELOPMENT OF BLAST  
PROTECTIVE FOOTWEAR, FABRICATION  
AND PROOFTESTING.  
AD-646 417

DEVELOPMENT, FABRICATION AND  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTI-PERSONNEL  
MINES USING A SUPPLEMENTARY DEVICE.  
AD-813 883

• FUNK, J. E. • • •

SENSIBLE HEAT TRANSFER IN THE  
GENINI AND APOLLO PRESSURE SUITS.  
AD-547 828

• FUNKHOUSER, GORDEN E. • • •

A PROTECTIVE PASSENGER SMOKE HOOD.  
AD-687 436

• FUOCO, R. P. • • •

COVERALL, CW PROTECTIVE: STORAGE  
AND PACKAGING.  
AD-701 820

• GASLIARDI, D. D. • • •

DEVELOPMENT OF CHARCOAL  
IMPREGNATION PROCESS FOR CW  
PROTECTIVE OVERGARNMENT.  
AD-888 099

• GARRETT, JOHN W. • • •

CLEARANCE AND PERFORMANCE VALUES  
FOR THE BARE-HANDED AND THE  
PRESSURE-GLOVED OPERATOR.  
AD-661 467

ANTHROPOMETRIC DIMENSIONS OF AIR  
FORCE PRESSURE-SUITED PERSONNEL FOR  
WORKSPACE AND DESIGN CRITERIA.  
AD-697 022

• • •  
ZOOH BAG SCENARIO.  
AD-697 466

• • •  
ANTHROPOLOGICAL APPLICATIONS IN  
HIGH ALTITUDE FLIGHT SYSTEMS.  
AD-706 888

• GAUDIO, RALPH, JR. • • •

APPLICATION OF THE HANQUE-WILSCH  
VORTEX TUBE TO AIRCREW COOLING  
PROBLEMS.  
AD-673 346

• • •  
VORTEX TUBE AS A THERMAL PROTECTIVE

P-7

UNCLASSIFIED

/ZOMDS

UNCLASSIFIED

GAU-GRE

DEVICE,  
AD-705 455

•GAUVIN, G. A. • • •

INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.  
AD-691 144

•GEORGE, MARILYN E. • • •

BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS.  
AD-626 619

•GERDING, JAMES J. • • •

PHYSIOLOGICAL EFFECTS OF WEARING  
THE FIRE PROXIMITY SUIT ON CRASH  
TRUCK ALERT STATUS TO HOT-DRY AND  
HOT-HUMID ENVIRONMENTS.  
AD-773 828

•GILLESPIE, KENT W. • • •

COMPARATIVE EVALUATION OF USAF  
STANDARD A/P225-2 AND IMPROVED  
A/P225-2A HIGH ALTITUDE, FULL  
PRESSURE FLYING OUTFITS.  
AD-467 823

THE DESIGN REQUIREMENTS,  
DESCRIPTION AND FUNCTIONAL  
OPERATION OF THE A/P225-4 AND  
A/P225-4 HIGH ALTITUDE, FLYING  
OUTFITS.  
AD-885 304

DESIGN AND DEVELOPMENT OF A HIGH  
ALTITUDE PROTECTIVE ASSEMBLY.  
AD-886 642

•GOLDMAN, R. F. • • •

CURRENT CONCEPTS AND PRACTICES  
APPLICABLE TO THE CONTROL OF BODY  
HEAT LOSS IN AIRCREW SUBJECTED TO  
WATER IMMERSION.

AD-635 052 • • •

'WET' VERSUS 'DRY' SUIT APPROACHES  
TO WATER IMMERSION PROTECTIVE  
CLOTHING.  
AD-638 092

•GOLDMAN, RALPH F. • • •

THE ARCTIC SOLDIER: POSSIBLE  
RESEARCH SOLUTIONS FOR HIS  
PROTECTION.  
AD-613 189

A METHOD OF RELATING PHYSIOLOGY AND  
MILITARY PERFORMANCE: A STUDY OF  
SOME EFFECTS OF VAPOR BARRIER  
CLOTHING IN A HOT CLIMATE.  
AD-672 876

TACTICAL IMPLICATIONS OF THE  
PHYSIOLOGICAL STRESS IMPOSED BY  
CHEMICAL PROTECTIVE CLOTHING  
SYSTEMS.  
AD-713 530

•GOOD, DONALD R. • • •

EVALUATION OF IMPROVED EXHALATION  
VALVE FOR HGU-8/P FLYING HELMET.  
AD-633 952

•GOODNIGHT, P. H. • • •

INTEGRATED BACK-PACK MANEUVERING  
UNIT PROPULSION STUDY AND EXHAUST  
PLUME HEATING ANALYSIS.  
AD-609 206

•GRAVES, KENNETH W. • • •

FIRE FIGHTER'S EXPOSURE STUDY.  
AD-722 774

•GREEN, KENNETH A. • • •

ANALYSIS OF THE THERMAL RESPONSE OF  
PROTECTIVE FABRICS.  
AD-759 525

•GREENE, J. L.

P-8  
UNCLASSIFIED

/ZOH08

UNCLASSIFIED

GREENED

• • •  
EVALUATION OF MODIFIED DIVERS

FEEL.  
AD-777 740

• • •  
GREENE, JAMES M.

• • •  
SOUND ATTENUATION CHARACTERISTICS  
OF THE PROJECT MERCURY PRE-  
PRODUCTION FULL PRESSURE SUIT  
HELMET.  
AD-622 197

• • •  
A TECHNIQUE FOR OPTIMAL FITTING OF  
FLIGHT HELMETS.  
AD-718 327

• • •  
GUPTA, V. K.

• • •  
WATER COOLED HOOD AFFECTS CREATIVE  
PRODUCTIVITY.  
AD-724 020

• • •  
HALL, DAVID A.

• • •  
PHYSIOLOGICAL EVALUATION OF THE  
BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT DURING IMMERSION.  
AD-668 809

• • •  
THERMAL EVALUATION OF A  
POLYVINYLCHLORIDE EXPOSURE SUIT  
(EMPRESS) AND COMPARISON WITH  
PRESENT SUBMARINE DECK EXPOSURE  
SUITS.  
AD-678 378

• • •  
HALL, J. F., JR.

• • •  
SENSIBLE HEAT TRANSFER IN THE  
GENINI AND APOLLO PRESSURE SUITS.  
AD-647 678

• • •  
HALL, JOHN F., JR.

• • •  
EFFECTS OF VARIOUS GASES ON  
HANDGEAR INSULATION.  
AD-679 367

• • •  
HALTON, J. E.

IMPREGNATION GLASS IMPROVEMENT  
TESTS.

AD-723 549

• • •  
HANSEN, DONALD B.

• • •  
A STUDY OF TECHNIQUES AND EQUIPMENT  
FOR THE EVALUATION OF  
EXTRAVENICULAR PROTECTIVE GARMENTS.  
AD-638 206

• • •  
HANSEN, R. DE B.

• • •  
A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING.  
AD-722 587

• • •  
HARDENBROOK, FREDERIC E.

• • •  
VENTILATED FLIGHT SUIT.  
AD-644 611

• • •  
HARGREAVES, JOHN J.

• • •  
FLAME PROTECTION AFFORDED NICE BY A  
NONCOMBUSTIBLE GARMENT IN 100%  
OXYGEN ATMOSPHERES.  
AD-665 833

• • •  
HART, J. A.

• • •  
COVERALL, CN PROTECTIVE: STORAGE  
AND PACKAGING.  
AD-781 520

• • •  
HARTER, JOHN V.

• • •  
DIVER EQUIPMENT TESTS PERFORMED  
DURING THE JOINT U. S. NAVY/DUKE  
UNIVERSITY 1000 FOOT SATURATION  
DIVE.  
AD-692 423

• • •  
HEARST, PETER J.

• • •  
CHEMICAL HEAT SOURCE FOR WET SUITS.  
AD-844 923

• • •  
HEDGE, JACK C.

• • •  
SURVEY OF THERMAL CONTROL

P-9  
UNCLASSIFIED

/ZONOS

UNCLASSIFIED

HEI-HOW

TECHNIQUES FOR EXTRAVEHICULAR SPACE SUITS.

AD-667 149

•HEITZ, K. M.

RESEARCH ON CLOSED-CELL SPONGE AS A PRESSURE TECHNIQUE FOR PROTECTIVE ASSEMBLIES.

AD-652 653

•HEITZ, ROGER M.

PRESSURE SEALING CLOSURES FOR FULL PRESSURE PROTECTIVE SUIT ASSEMBLIES.

AD-659 234

•HENDLER, EDWIN

METABOLIC MECHANISMS OF MAN IN THE FULL PRESSURE SUIT. PHYSIOLOGICAL COST OF DONNING A FULL PRESSURE SUIT.

AD-609 937

•HENRIE, GORDON C.

VENTIL. ANTI-EXPOSURE SUIT.

AD-614 627

•HENRY, MALCOLM C.

A STUDY OF SEAM LEAKAGE IN COATED FABRICS.

AD-708 874

•HESS, W. C.

ENGINEERING RESEARCH PROTOTYPE DISTRIBUTION SYSTEMS FOR THERMAL PROTECTIVE CLOTHING.

AD-646 276

•HIGGINBOTTOM, GEORGE S.

FLAME-RETARDANT CLOTHING AND TEXTILE ITEMS FOR USE IN OXYGEN-ENRICHED ENVIRONMENTS OF DECOMPRESSION CHAMBERS.

AD-779 886

•KILLE, HARALD K.

ACOUSTICAL EVALUATION OF X-20A DYWIDAG SOAR FULL-PRESSURE SUIT ASSEMBLIES.

AD-618 715

•HOCHWALT, JOHN R.

WINDBLAST TEST OF HIGH-ALTITUDE FLYING OUTFIT A/P225-4.

AD-677 249

THE DESIGN REQUIREMENTS.

DESCRIPTION AND FUNCTIONAL OPERATION OF THE A/P225-4 AND A/P225-6 HIGH ALTITUDE, FLYING OUTFITS.

AD-685 304

THERMAL PROTECTION CAPACITY OF THE A/P225-4 HIGH ALTITUDE FLYING OUTFIT.

AD-685 575

•HOMER, G. M.

BIOCHEMICAL AND PHYSIOLOGICAL EVALUATION OF HUMAN SUBJECTS WEARING PRESSURE SUITS UNDER SIMULATED AEROSPACE CONDITIONS.

AD-626 619

•HARRIS, DAVID J., JR.

PHYSIOLOGICAL EFFECTS OF DIFFERENT OXYGEN FLOW RATES AND AMBIENT TEMPERATURES ON PRESSURE-SUITED SUBJECTS PERFORMING WORK AT ALTITUDE.

AD-663 907

•HOWARD, DOUGLAS C.

ENGINEERING DESIGN STUDY OF A SPACE SUIT WITH AN INTEGRATED ENVIRONMENTAL CONTROL SYSTEM.

AD-680 826

INTEGRATED MANEUVERING LIFE SUPPORT SYSTEM.

AD-714 577

P-10

UNCLASSIFIED

/ZON08

UNCLASSIFIED

IAC-KAU

•IACONO, VINCENT D.  
• • •  
DEVELOPMENT OF A PERSONAL COOLING  
SYSTEM FOR EXPLOSIVE ORDNANCE  
DISPOSAL PERSONNEL.  
AD-702 245  
• • •  
MICROCLIMATE-CONTROLLED  
(THERMAL) CLOTHING SYSTEMS  
FOR MILITARY APPLICATIONS.  
AD-713 581  
•IACONO, VINCENT D., JR  
• • •  
PROTECTIVE CLOTHING AND LIFE  
SUPPORT EQUIPMENT FOR EXPLOSIVE  
ORDNANCE DISPOSAL PERSONNEL.  
AD-682 730  
•IBERALL, ARTHUR S.  
• • •  
THE USE OF LINES OF NONEXTENSION TO  
IMPROVE MOBILITY IN FULL-PRESSURE  
SUITS.  
AD-610 519  
•ISAAC, JAMES E.  
• • •  
EVALUATION OF FIRE RETARDANT FLIGHT  
GLOVES(NOMEX). (ACA-63/671).  
AD-826 388  
•JACKSON, DAVID L.  
• • •  
EVALUATION OF THE NSRDL HEATER PUMP  
PERFORMANCE CHARACTERISTICS AND  
RELIABILITY.  
AD-494 023  
•JENKINS, WALLACE T.  
• • •  
AD HOC COMMITTEE REPORT.  
AD-699 170  
• • •  
EVALUATION OF SWIMMER EXPOSURE  
SUITS IN SUBFREEZING WATERS.  
AD-886 843  
•JONES, G. W.  
• • •  
RESEARCH ON CLOSED-CELL SPONGE AS A

PRESSURE TECHNIQUE FOR PROTECTIVE  
ASSEMBLIES.  
AD-652 653  
•JOY, ROBERT J. T.  
• • •  
A METHOD OF RELATING PHYSIOLOGY AND  
MILITARY PERFORMANCE: A STUDY OF  
SOME EFFECTS OF VAPOR BARRIER  
CLOTHING IN A HOT CLIMATE.  
AD-672 876  
•JUDGE, L. B.  
• • •  
DEVELOPMENT OF PRACTICAL HIGH-  
INTENSITY THERMAL PROTECTION  
SYSTEMS.  
AD-709 570  
•JURCZAK, RAY A.  
• • •  
TROPIC SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE  
CREWMEN.  
AD-857 571  
•JURGENSE, F.  
• • •  
AIRCREW COOLING STUDY.  
AD-668 139  
•KARLINA, K. V.  
• • •  
ASSESSMENT OF THE THERMAL  
RESISTANCE OF CLOTHING.  
AD-750 830  
•KASWELL, ERNEST R.  
• • •  
DEVELOPMENT OF THERMALLY DURABLE  
COATED FABRICS FOR USE IN FLIGHT  
GLOVES.  
AD-737 099  
• • •  
DEVELOPMENT OF PBI FABRIC FOR  
FLIGHT SUIT WEAR TEST.  
AD-914 019  
•KAUFMAN, WILLIAM C.  
• • •  
DESCRIPTION AND OPERATING

P-11  
UNCLASSIFIED

/ZONOS

UNCLASSIFIED

KEI-KRI

INSTRUCTIONS FOR A 7-CHANNEL  
TELEMETRY SYSTEM FOR PHYSIOLOGICAL  
TEMPERATURES AND THE  
ELECTROCARDIOGRAM.  
AD-646 067

•KEISER, GEORGE H.

THE TESTING OF THERMAL PROTECTIVE  
CLOTHING IN A REPRODUCIBLE FUEL  
FIRE ENVIRONMENT, A FEASIBILITY  
STUDY.  
AD-779 362

•KELLY, WARREN T.

LABORATORY SHRINKAGE EVALUATION OF  
NOMEX SUMMER FLIGHT SUITS.  
AD-657 853

•KINCAID, C. T.

CANADIAN SELF-CONTAINED DIVING  
EQUIPMENT PERFORMANCE TESTS.  
AD-892 055

•KISSEN, ABBOTT T.

PHYSIOLOGICAL EFFECTS OF WEARING  
THE FIRE PROXIMITY SUIT ON CRASH  
TRUCK ALERT STATUS TO HOT-DRY AND  
HOT-HUMID ENVIRONMENTS.  
AD-773 828

•KLFIN, JOHN H.

SERVICE TEST OF FUNCTIONAL UNIFORM  
FOR ARMORED VEHICLE CREWMEN  
(SUMMER).  
AD-856 281

•KLEMM, F. K.

SENSIBLE HEAT TRANSFER IN THE  
GEMINI AND APOLLO PRESSURE SUITS.  
AD-647 828

•KLEMM, FRITZ K.

COLD WATER EVALUATION OF  
ENVIRONMENTAL MARINE DIVING SUITS.

AD-754 278

•KNOX, FRANCIS S., III

THE TESTING OF THERMAL PROTECTIVE  
CLOTHING IN A REPRODUCIBLE FUEL  
FIRE ENVIRONMENT, A FEASIBILITY  
STUDY.  
AD-729 362

ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.  
AD-732 429

•KOBRIITS, G. A.

STORAGE OF CHEMICAL AGENTS (I).  
SPECIAL CLOTHING FOR WORKING IN  
WAREHOUSES (II).  
AD-841 293

•KONZ, S.

WATER COOLED HOOD AFFECTS CREATIVE  
PRODUCTIVITY.  
AD-724 020

•KONZ, STEPHAN A.

A COOLING HOOD IN HOT-HUMID  
ENVIRONMENTS.  
AD-684 582

•KORABOWSKI, JOHN J.

ROCKET PROPELLANT HANDLER'S SUIT.  
AD-876 933

•KRAHER, JAMES H.

HEIGHT-WEIGHT SIZING OF PROTECTIVE  
GARMENTS, BASED ON JAPANESE AIR  
SELF-DEFENSE FORCE PILOT DATA, WITH  
FIT-TEST RESULTS.  
AD-606 039

•KRICHAGIN, V.

SPACE CLOTHING OF SUBJUGATORS OF

/ZON08

UNCLASSIFIED

KUP-LON

OUTER SPACE,  
AD-620 099

\*KUPFERMAN, ZELIG

DEVELOPMENT OF AN INTEGRAL,  
NEOPRENE-COATED, ALUMINIZED,  
ASBESTOS CLOTH FOR FIRE FIGHTERS'  
SHIPBOARD COVERALLS.  
AD-746 159

THE DEVELOPMENT OF A BUOYANT-  
BALLISTIC VEST FOR NAVAL FORCES.  
AD-749 345

\*KUZNETSOV, YU.

FABRIC-PROTECTORS,  
AD-781 309

\*KYDD, A. R.

THERMAL-PHYSICAL PARAMETERS OF  
MATERIALS.  
AD-631 295

INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.  
AD-691 144

\*LANTERMAN, RICHARD S.

A PORTABLE TEST BATTERY FOR  
COMPARATIVELY EVALUATING OPERATOR  
PERFORMANCE IN FULL-PRESSURE SUIT  
ASSEMBLIES.  
AD-680 825

\*LAWRIVEE, MAURICE N.

DEVELOPMENT AND EVALUATION OF DEEP-  
SEA SWIMSUIT MATERIALS.  
AD-763 378

\*LARSEN, R. E.

INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.  
AD-691 144

\*LARSON, R. E.

THERMAL-PHYSICAL PARAMETERS OF  
MATERIALS.  
AD-631 295

\*LASTNIK, ABRAHAM L.

ADVANCES IN THE DEVELOPMENT OF HEAD  
PROTECTION FOR AIRCRAFT CREWMEN.  
AD-646 388

\*LAUGHLIN, ROBERT C.

ENGINEERING TEST OF JUNGLE HAT WITH  
HEADNET.  
AD-839 405

\*LETO, FRANK C., JR.

DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.  
AD-727 606

\*LEVERETT, SIDNEY B., JR.

\*G(I) PROTECTION AFFORDED BY  
STANDARD AND PREACCELERATION  
INFLATIONS OF THE BLADDER AND  
CAPSYAN TYPE G-SUITS.  
AD-741 779

\*LEVIN, ALEXANDER

INVESTIGATION OF THE PERFORMANCE OF  
AN OPEN-FLAME CONVECTOR.  
AD-636 398

\*LINCOLN, R. E.

STUDY OF HUMAN PERFORMANCE IN A  
MARK IV PRESSURE SUIT.  
AD-619 029

\*LONBARD, C. F.

INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.  
AD-782 124

P-13  
UNCLASSIFIED

/ZON04



UNCLASSIFIED

LOM-MAR

• LOMBARD, CHARLES F. • • •

VARIABLE THERMAL CONDUCTIVITY HEAT  
TRANSFER RESEARCH FOR PERSONAL  
PROTECTIVE ASSEMBLIES.

AD-668 765

• MACDONALD, J. L. • • •

RESEARCH AND DEVELOPMENT OF BLAST  
PROTECTIVE FOOTWEAR, FABRICATION  
AND PROOFTESTING.

AD-648 417

DEVELOPMENT, FABRICATION AND  
PROOFTESTING OF OPTIMUM FOOT  
PROTECTION AGAINST ANTIPERSONNEL  
MINES USING A SUPPLEMENTARY DEVICE.

AD-813 883

• MACKENZIE, W. E. • • •

METHODS OF SANITIZING AND  
DEODORIZING RUBBERIZED FABRIC AND  
PRODUCING TEMPORARY ANTI-STATIC  
FILMS ON SYNTHETIC MATERIALS.

AD-609 164

• MAHONEY, PATRICK J. • • •

INVESTIGATION OF METHODS FOR  
IMPROVING THE FRICTIONAL PROPERTIES  
OF RUBBER COMPOUNDS USED IN  
FOOTWEAR.

AD-733 312

• MANDROVSKY, B. • • •

AEROSPACE LIFE SUPPORT SYSTEMS AND  
CREW PROTECTIVE EQUIPMENT,

AD-668 840

• MANGUM, EDWIN W. • • •

ENGINEERING TEST OF SPIKE RESISTANT  
INSOLE.

AD-474 980

ENGINEERING TEST OF BOOT, COMBAT,  
MOUNTAIN AND SKI.

AD-836 549

• MARCUM, A. L. • • •

EXPERIMENTAL SPACE WORKER'S GARMENT  
AND HELMET ASSEMBLY.

AD-738 088

• MARCUM, ALFRED • • •

EXPLORATORY DEVELOPMENT OF PRESSURE  
SUIT MOBILITY JOINTS, GLOVES AND  
HELMET.

AD-711 676

EXPLORATORY DEVELOPMENT OF PARTIAL  
PRESSURE HELMET AND MOBILITY JOINTS  
FOR EMERGENCY PRESSURE SUIT  
OUTFITS.

AD-720 275

• MARKO, ADOLF R. • • •

EVALUATION OF FIRE RETARDANT  
FABRICS.

AD-754 935

• MARKO, ADOLPH R. • • •

DESCRIPTION AND OPERATING  
INSTRUCTIONS FOR A 7-CHANNEL  
TELEMETRY SYSTEM FOR PHYSIOLOGICAL  
TEMPERATURES AND THE  
ELECTROCARDIOGRAM.

AD-686 067

• MARTIN, ANDREW S. • • •

ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION,

AD-732 429

• MARTINEZ, VICTOR S. • • •

ENGINEERING TEST OF PROTECTIVE  
HELMET SPH-4.

AD-862 006

• MARTONE, JOSEPH A. • • •

A ROCKET PROPELLANT HANDLER'S SUIT

P-14  
UNCLASSIFIED

/ZONOB

UNCLASSIFIED

HAT-NIL

FOR PROTECTION FROM CHLORINE  
TRIFLUORIDE AND ELEMENTAL FLUORINE.  
AD-721 556

SHATTINGLY, T. E.  
\* \* \*  
INVESTIGATION OF VIBRATION AND  
IMPACT PROTECTION OF THE HUMAN HEAD  
AND NECK.  
AD-702 124

SHAUCH, H. A.  
\* \* \*  
EXPERIMENTAL SPACE WORKER'S GARMENT  
AND HELMET ASSEMBLY.  
AD-738 088

SHAZY, F. W.  
\* \* \*  
MOMENTS OF INERTIA AND CENTERS OF  
GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 843

SHCAHAN, GEORGE R., JR.  
\* \* \*  
ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.  
AD-732 429

SHCONVILLE, JOHN T.  
\* \* \*  
HEIGHT-WEIGHT SIZING OF PROTECTIVE  
GARMENTS, BASED ON JAPANESE AIR  
SELF-DEFENSE FORCE PILOT DATA, WITH  
FIT-TEST RESULTS.  
AD-406 039

SHDONOUGH, PETER J.  
\* \* \*  
NAVAL APPLICATIONS OF MAN-IN-THE-  
SEA CONCEPTS - MISSION DEFINITION.  
AD-863 709

SHCFADDEN, ERNEST B.  
\* \* \*  
A PROTECTIVE PASSENGER SMOKE HOOD.  
AD-657 436

PROTECTIVE SMOKE HOOD STUDIES.  
AD-727 021

SHCINNIS, JOHN H.  
\* \* \*  
HUMAN FACTORS STUDY OF GNC CLOTHING  
AND EQUIPMENT DURING COLD WEATHER  
TESTS OF THE SERGEANT MISSILE  
SYSTEM. II.  
AD-701 864

\* \* \*  
HUMAN FACTORS STUDY OF GNC CLOTHING  
AND EQUIPMENT DURING COLD WEATHER  
TESTS OF THE PERSHING MISSILE  
SYSTEM.  
AD-701 872

SHERCER, DONALD G.  
\* \* \*  
ENGINEERING TEST OF CLOTHING SYSTEM  
(SUMMER UNIFORM) FOR ARMY AVIATION  
CREW MEMBERS.  
AD-680 180

SHERRILL, GLEN L.  
\* \* \*  
AUTOMATIC TEMPERATURE CONTROL FOR  
LIQUID-COOLED FLIGHT SUITS.  
AD-655 834

SHILAN, FREDERICK A.  
\* \* \*  
PROJECT COLD CASE.  
AD-462 767

SHILLER, A. K.  
\* \* \*  
STUDY OF HUMAN PERFORMANCE IN A  
MARK IV PRESSURE SUIT.  
AD-619 029

SHILLER, NEIL  
\* \* \*  
METABOLIC MECHANISMS OF MAN IN THE  
FULL PRESSURE SUIT. PHYSIOLOGICAL  
COST OF DONNING A FULL PRESSURE  
SUIT.  
AD-609 937

SHILLER, B. A.  
\* \* \*

P-15  
UNCLASSIFIED

/ZOM08

MOE-OLS

UNCLASSIFIED

EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.  
AD-678 088

•MOEGLING, J. B. • • •

SENSIBLE HEAT TRANSFER IN THE  
GENINI AND APOLLO PRESSURE SUITS.  
AD-647 828

•MORAN, H. E. • • •

REACTIVITY OF VARIOUS DAMAGE  
CONTROL PROTECTIVE CLOTHING  
MATERIALS WITH CHLORINE  
TRIFLUORIDE.  
AD-646 062

•MORSE, HOWARD L. • • •

ANALYSIS OF THE THERMAL RESPONSE OF  
PROTECTIVE FABRICS.  
AD-749 525

•MOYER, CARL B. • • •

ANALYSIS OF THE THERMAL RESPONSE OF  
PROTECTIVE FABRICS.  
AD-759 525

•MURDOCH, RICHARD A. • • •

AD HOC COMMITTEE REPORT.  
AD-699 170

•KAUMER, D. A. • • •

VENTILATING BACKPACK FOR THE SUIT  
SYSTEM, TOXICOLOGICAL PROTECTIVE  
MICRO-CLIMATE CONTROLLED (CB  
PROTECTIVE SYSTEM FOR EOD  
PERSONNEL).  
AD-748 838

•NEHLSEN, WILLIAM R. • • •

IMPREGNATION PLANT IMPROVEMENT  
TESTS.  
AD-723 549

•NENTWICH, H. FRITZ

• • •  
A COOLING HOOD IN HOT-HUMID  
ENVIRONMENTS.  
AD-684 582

•NEVINS, RALPH G. • • •

PROCEEDINGS OF THE SYMPOSIUM ON  
INDIVIDUAL COOLING, MARCH 17-18,  
1969.  
AD-694 130

•NOBEL, JOEL J. • • •

PHYSIOLOGICAL EVALUATION OF THE  
BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT DURING IMMERSION.  
AD-668 809

• • •  
THERMAL EVALUATION OF A  
POLYVINYLCHLORIDE EXPOSURE SUIT  
(EMPRESS) AND COMPARISON WITH  
PRESENT SUBMARINE DECK EXPOSURE  
SUITS.  
AD-678 375

•NORSWORTHY, MARY E. • • •

TEST AND EVALUATION OF U. S. AIR  
FORCE EXPERIMENTAL CUTAWAY TYPE  
ANTI-BLACKOUT SUITS DESIGNATED MA-  
1.  
AD-622 047

•OAKES, KEITH W. • • •

EVALUATION OF CREW MEMBER'S  
IMPROVED FIRE RESISTANT FLIGHT  
COVERALLS.  
AD-814 366

•OLSON, MARK W. • • •

RESEARCH AND DEVELOPMENT ON A  
PASSIVELY PRESSURIZED FLIGHT  
UNIFORM.  
AD-702 537

•OLSON, ROBERT B. • • •

VARIABLE THERMAL CONDUCTIVITY HEAT

P-16  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

ORN-PRE

TRANSFER RESEARCH FOR PERSONAL  
PROTECTIVE ASSEMBLIES.  
AD-668 765

\*ORNER, GEORGE H.

DEVELOPMENT AND EVALUATION OF AN  
OXYGEN-SENSING WARNING DEVICE.  
AD-715 377

\*OSBORNE, NORMAN H.

RESEARCH AND DEVELOPMENT OF  
EXTRAVEHICULAR PROTECTIVE ASSEMBLY.  
AD-647 197

\*PANAFIDIN, K. A.

STORAGE OF CHEMICAL AGENTS (I).  
SPECIAL CLOTHING FOR WORKING IN  
WAREHOUSES (II).  
AD-841 293

\*PARKER, JAMES F., JR.

INVESTIGATION AND RECOMMENDATIONS  
CONCERNING PROTECTIVE CLOTHING AND  
EQUIPMENT FOR NAVY PERSONNEL ON  
FLIGHT AND HANGAR DECKS OF AIRCRAFT  
CARRIERS.  
AD-872 758

\*PARKER, JAMES F., JR.

EFFECTIVE LIFE SUPPORT HELMETS.  
AD-636 044

\*PARKHURST, MICHAEL J.

\*GIZI PROTECTION AFFORDED BY  
STANDARD AND PREACCELERATION  
INFLATIONS OF THE BLADDER AND  
CAPSTAN TYPE G-SUITS.  
AD-761 779

\*PARRY, DAVID G.

A STUDY OF TECHNIQUES AND EQUIPMENT  
FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE GARMENTS.  
AD-635 206

\*PATTON, ROBERT H.

EVALUATION OF A NET SUIT IN  
CONJUNCTION WITH ANTI-BLACKOUT  
PROTECTION.  
AD-688 808

\*PAYNE, ROBERT H.

EVALUATION CRITERIA FOR HEATED  
DIVER SUIT SYSTEMS.  
AD-884 560

\*PESCI, ROBERT A.

SERVICE TEST OF FUNCTIONAL UNIFORM  
FOR ARMORED VEHICLE CREWMEN  
(WINTER).  
AD-884 632

\*PFAPPE, H.

SPACE SUITS - SPACE FASHION  
(RAUMANZUEGE - MODE DES KOSMOS).  
AD-823 299

\*PLESKUN, WALTER G.

DESIGN AND FABRICATION OF A  
PASSIVELY PRESSURIZED SUIT.  
AD-720 827

\*PRATT, C. L.

INTEGRATED BACK-PACK MANEUVERING  
UNIT PROPULSION STUDY AND EXHAUST  
PLUME HEATING ANALYSIS.  
AD-609 206

\*PRATT, R. L.

SOME EFFECTS OF ABSORBENCY OF  
CLOTHING MATERIALS.  
AD-685 147

\*PREISHERK, P. R.

SLIP NET MOBILITY JOINTS FOR  
PRESSURE SUITS.  
AD-848 405

P-17  
UNCLASSIFIED

/ZON08

UNCLASSIFIED

PYL-REI

• PYLE, D. . . .  
AEROSPACE LIFE SUPPORT SYSTEMS AND  
PPE, PROTECTIVE EQUIPMENT,  
AD-669 040

• RARKIN, I. G. . . .  
SOVIET HIGH ALTITUDE EQUIPMENT FOR  
AIRCREW PROTECTION,  
AD-642 178

• RADLIFF, MEREDITH H. . . .  
PHYSIOLOGICAL EVALUATION OF  
SUBJECTS EXPOSED TO A COLD WATER  
ENVIRONMENT WHILE WEARING DIFFERENT  
PROTECTIVE SUIT ASSEMBLIES.  
AD-724 617

• RADLIFF, MEREDITH H. . . .  
PHYSIOLOGICAL EFFECTS OF DIFFERENT  
OXYGEN FLOW RATES AND AMBIENT  
TEMPERATURES ON PRESSURE-SUITED  
SUBJECTS PERFORMING WORK AT  
ALTITUDE.  
AD-663 907

• RAMSLEY, A. O. . . .  
MODERN COUNTER-SURVEILLANCE IN  
COMBAT CLOTHING,  
AD-713 573

• RATINO, DAVID A. . . .  
DESCRIPTION AND OPERATING  
INSTRUCTIONS FOR A 7-CHANNEL  
TELEMETRY SYSTEM FOR PHYSIOLOGICAL  
TEMPERATURES AND THE  
ELECTROCARDIOGRAM.  
AD-686 067

• RAWLINS, JOHN S. P. . . .  
THEORETICAL THERMAL REQUIREMENTS  
FOR THE MARK II DIVING SYSTEM.  
AD-694 013

• . . .  
EVALUATION OF THE NSRDH HEATER PUMP

PERFORMANCE CHARACTERISTICS AND  
RELIABILITY.  
AD-694 023

• . . .  
EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.  
AD-705 064

• REBKOV, M. P. . . .  
SOVIET HIGH ALTITUDE EQUIPMENT FOR  
AIRCREW PROTECTION,  
AD-642 178

• REEVES, E. . . .  
CURRENT CONCEPTS AND PRACTICES  
APPLICABLE TO THE CONTROL OF BODY  
HEAT LOSS IN AIRCREW SUBJECTED TO  
WATER IMMERSION.  
AD-638 052

• . . .  
'WET' VERSUS 'DRY' SUIT APPROACHES  
TO WATER IMMERSION PROTECTIVE  
CLOTHING.  
AD-638 092

• REEVES, ELIZABETH . . . .  
AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCREWS.  
AD-637 153

• REINHARDT, STEPHEN D. . . .  
EVALUATION OF LIGHTWEIGHT DEEP SEA  
DIVING DRESS.  
AD-909 928

• REINS, D. A. . . .  
PHYSIOLOGICAL EVALUATION OF EFFECTS  
ON PERSONNEL WEARING THE MICROWAVE  
PROTECTIVE SUIT AND OVERGARMENT.  
AD-690 890

• REINS, DALE A. . . .

UNCLASSIFIED

REN-RUS

PHYSIOLOGICAL EVALUATION OF A  
COMMERCIALY AVAILABLE ABANDON-SHIP  
SURVIVAL SUIT.  
AD-734 136

EVALUATION OF HEAT LOSS FROM NAVY  
DIVERS' WET SUIT.  
AD-747 276

DAMAGE CONTROL SUIT SYSTEM.  
AD-7,2 428

ORENTECH, SAMUEL B., JR.

EVALUATION FOR SERVICE USE OF A  
PROTO-TYPE SWIMMER'S RESCUE SUIT.  
AD-443 434

ORENTZ, FREDERICK P.

A REVIEW OF AVAILABLE HEATED WET-  
SUIT PROTECTION FOR DIVERS AND  
SWIMMERS.  
AD-748 313

OREYNOLDS, M. J.

A PROTECTIVE PASSENGER SMOKE HOOD.  
AD-657 436

ORICHARDSON, DAVID L.

STUDY AND DEVELOPMENT OF MATERIALS  
AND TECHNIQUES FOR PASSIVE THERMAL  
CONTROL OF FLEXIBLE EXTRAVEHICULAR  
SPACE GARMENTS.  
AD-624 486

TECHNIQUES AND MATERIALS FOR  
PASSIVE THERMAL CONTROL OF RIGID  
AND FLEXIBLE EXTRAVEHICULAR SPACE  
ENCLOSURES.  
AD-666 940

RESEARCH TO ADVANCE EXTRAVEHICULAR  
PROTECTIVE TECHNOLOGY.  
AD-818 964

ORITZER, R.

VENTILATING BACKPACK FOR THE SUIT

SYSTEM; TOXICOLOGICAL PROTECTIVE  
MICRO-CLIMATE CONTROLLED ICS  
PROTECTIVE SYSTEM FOR EOD  
PERSONNEL.  
AD-748 838

ORITZINGER, FREDERICK R.

PRELIMINARY STUDIES ON A NEW  
PARTIAL-PRESSURE SUIT CONCEPT.  
AD-682 207

OROBINETTE, JOAN C.

ANTHROPOLOGICAL APPLICATIONS IN  
HIGH ALTITUDE FLIGHT SYSTEMS.  
AD-706 888

OROCCO, R. M.

RESEARCH AND DEVELOPMENT OF HELMET  
FACEPIECES FOR SPACE PROTECTIVE  
ASSEMBLIES.  
AD-682 248

OROCK, LEE C.

RESEARCH AND DEVELOPMENT OF  
EXTRAVEHICULAR PROTECTIVE ASSEMBLY.  
AD-647 197

OPERATIONAL CHARACTERISTICS OF THE  
1964 EXTRAVEHICULAR RESEARCH MODEL  
FULL PRESSURE ASSEMBLY.  
AD-819 324

ORUNYAN, B. P.

FULL PRESSURE SUIT FOR SPACE CREWS.  
AD-839 426

ORUSSEKAS, JOSEPH A.

DESIGN AND FABRICATION OF A  
PASSIVELY PRESSURIZED SUIT.  
AD-720 827

ORUSH, RAY

GARMENTS, OUTER (WET WEATHER).  
AD-755 643

P-19  
UNCLASSIFIED

/ZOM08

UNCLASSIFIED

RUS-SHA

- RUST, L. W.  
• • •  
INVESTIGATIONS OF HEAT AND MASS  
(WATER VAPOR AND LIQUID) MOVEMENT  
THROUGH CLOTHING SYSTEMS.  
AD-691 144
- RYACK, BERNARD L.  
• • •  
HUMAN FACTORS EVALUATION OF  
SUBMARINE ESCAPE: II-A. TOP  
EGRESS WITH THE BRITISH SUBMARINE  
ESCAPE IMMERSION SUIT AND THE  
STEINKE HOOD.  
AD-730 711
- SANDERS, JAMES H., JR  
• • •  
INVESTIGATION AND RECOMMENDATIONS  
CONCERNING PROTECTIVE CLOTHING AND  
EQUIPMENT FOR NAVY PERSONNEL ON  
FLIGHT AND HANGAR DECKS OF AIRCRAFT  
CARRIERS.  
AD-872 758
- SANTAMARIA, LOUIS J.  
• • •  
PHYSIOLOGICAL EFFECTS OF DIFFERENT  
OXYGEN FLOW RATES AND AMBIENT  
TEMPERATURES ON PRESSURE-SUITED  
SUBJECTS PERFORMING WORK AT  
ALTITUDE.  
AD-663 907
- • •  
PHYSIOLOGICAL EVALUATION OF THE  
BRITISH MARK VII SUBMARINE ESCAPE  
IMMERSION SUIT DURING IMMERSION.  
AD-668 809
- • •  
PHYSIOLOGICAL EVALUATION OF  
SUBJECTS EXPOSED TO A COLD WATER  
ENVIRONMENT WHILE WEARING DIFFERENT  
PROTECTIVE SUIT ASSEMBLIES.  
AD-724 617
- SANTSCHI, W. R.  
• • •  
MOMENTS OF INERTIA AND CENTERS OF  
GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 863
- SCHNEIDER, NATHANIEL S.  
• • •  
PASSIVE THERMAL CONTROL SYSTEMS FOR  
ADVANCED SPACE SUIT CONCEPTS.  
AD-714 224
- SCHUELLER, OTTO  
• • •  
PRINCIPLES OF THE BOYLE'S LAW  
EMERGENCY PRESSURE SUIT AND THEIR  
APPLICATION.  
AD-685 720
- • •  
AN AUTOMATIC ANALOG BREATHING  
SYSTEM FOR MULTICELL PRESSURE  
SUITS.  
AD-687 436
- SCHULMAN, STANLEY  
• • •  
NONFLAMMABLE FBI FABRICS FOR  
PROTOTYPE AIR FORCE FLIGHT SUITS.  
AD-680 047
- SCHULTE, JOHN H.  
• • •  
FIELD EVALUATION OF MODIFIED  
SUBMARINE RESCUE AND ESCAPE SUITS.  
AD-663 886
- SCOTT, C. O.  
• • •  
MOMENTS OF INERTIA AND CENTERS OF  
GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-609 863
- SEARS, CHARLES W.  
• • •  
MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS.  
AD-626 979
- SHANPINE, JAMES C.  
• • •  
PHYSIOLOGICAL EVALUATION OF A  
COMMERCIALY AVAILABLE ABANDON-SHIP  
SURVIVAL SUIT.  
AD-734 136
- • •

P-20  
UNCLASSIFIED

/ZON08

UNCLASSIFIED

SHA-80F

EVALUATION OF HEAT LOSS FROM NAVY  
DIVERS' WET SUIT,  
AD-747 276

SHARP, EARL D.

A COMPARISON OF THREE FULL-PRESSURE  
SUITS IN TERMS OF CONTROL  
ACTIVATION TIME,  
AD-613 597

SHELLEY, JAMES B.

DEVELOPMENT OF A LIGHTWEIGHT BUTYL-  
COATED STRETCH FABRIC,  
AD-672 118

SHIRANOV, N.

FUNCTIONAL SPECIAL CLOTHING FOR  
BUILDERS,  
AD-742 816

SHORT, S.

A LABORATORY COMPARISON OF THREE  
METHODS OF PERSONAL CONDITIONING,  
AD-722 857

SIEGEL, ARTHUR I.

A PORTABLE TEST BATTERY FOR  
COMPARATIVELY EVALUATING OPERATOR  
PERFORMANCE IN FULL-PRESSURE SUIT  
ASSEMBLIES,  
AD-680 825

SILVIA, JOHN

THE DEVELOPMENT OF A BUOYANT-  
BALLISTIC VEST FOR NAVAL FORCES,  
AD-748 348

SILVIA, JOHN, JR.

FLAME-RETARDANT CLOTHING AND  
TEXTILE ITEMS FOR USE IN OXYGEN-  
ENRICHED ENVIRONMENTS OF  
DECOMPRESSION CHAMBERS,  
AD-779 886

SIMONS, JOHN C.

MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS,  
AD-626 979

SKEELTON, JOHN

DEVELOPMENT OF THERMALLY DURABLE  
COATED FABRICS FOR USE IN FLIGHT  
GLOVES,  
AD-737 099

SLAWIK, JOSEF

EXPLORATORY DEVELOPMENT OF PRESSURE  
SUIT MOBILITY JOINTS, GLOVES AND  
HELMET,  
AD-711 676

EXPLORATORY DEVELOPMENT OF PARTIAL  
PRESSURE HELMET AND MOBILITY JOINTS  
FOR EMERGENCY PRESSURE SUIT  
OUTFITS,  
AD-730 278

SMILES, KENNETH A.

PHYSIOLOGICAL EFFECTS OF WEARING  
THE FIRE PROXIMITY SUIT ON CRASH  
TRUCK ALERT STATUS TO HOT-DRY AND  
HOT-HUMID ENVIRONMENTS,  
AD-733 830

SMITH, K. J.

BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS,  
AD-626 419

SMITH, ROGER C.

PROTECTIVE SMOKE MASK STUDIES,  
AD-727 021

SOFRONOV, S. V.

SOVIET HIGH ALTITUDE EQUIPMENT FOR

P-21

UNCLASSIFIED

/ZOMOM



UNCLASSIFIED

SUM-SUL

- AIRCRAFT PROTECTION,  
AD-642 173
- SONMFR, HENRY C.  
•••  
ACOUSTICAL EVALUATION OF X-20A DYN-  
50AF FULL-PRESSURE SUIT ASSEMBLIES.  
AD-618 715
- SPAETH, JEANNE F.  
•••  
FOOTWEAR FOR INUNDATED AREAS.  
AD-746 694
- SPANIO, LEO A.  
•••  
MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) PROTECTIVE CLOTHING  
SYSTEM FOR MILITARY APPLICATIONS.  
AD-642 715
- FLOW OF HEAT AND WATER VAPOR  
THROUGH PROTECTIVE CLOTHING.  
AD-712 994
- MICROCLIMATE-CONTROLLED  
(THERMALIBRIUM) CLOTHING SYSTEMS  
FOR MILITARY APPLICATIONS.  
AD-713 541
- PASSIVE THERMAL CONTROL SYSTEMS FOR  
ADVANCED SPACE SUIT CONCEPTS.  
AD-714 224
- SPASSKIY, V. A.  
•••  
HIGH-ALTITUDE PRESSURE SUITS AND  
HERMETICALLY SEALED CABINS FOR  
STRATOSPHERIC FLIGHTS.  
AD-458 909
- SPECKMANN, E. W.  
•••  
BIOCHEMICAL AND PHYSIOLOGICAL  
EVALUATION OF HUMAN SUBJECTS  
WEARING PRESSURE SUITS UNDER  
SIMULATED AEROSPACE CONDITIONS.  
AD-626 619
- STANTON, ROBERT M.  
•••
- DEVELOPMENT OF REFLECTIVE MATERIALS  
FOR FIRE FIGHTER'S BOOTS.  
AD-762 544
- NONFLAMMABLE PBI FABRICS FOR  
PROTOTYPE AIR FORCE FLIGHT SUITS.  
AD-880 047
- STARR, JAMES B.  
•••  
AUTOMATIC TEMPERATURE CONTROL FOR  
LIQUID-COOLED FLIGHT SUITS.  
AD-655 834
- STEPHENS, MELVIN P.  
•••  
AN EVALUATION OF THE FOAMED  
NEOPRENE 'DIVER'S WET SUIT' AS A  
SURVIVAL GARMENT FOR HELICOPTER  
AIRCRAFTS.  
AD-637 153
- STERRETT, DALE E.  
•••  
SERVICE TEST OF FUNCTIONAL UNIFORM  
FOR ARMORED VEHICLE CREWMEN  
(SUMMER).  
AD-856 281
- STOLL, ALICE M.  
•••  
DEVELOPMENT OF PRACTICAL HIGH-  
INTENSITY THERMAL PROTECTION  
SYSTEMS.  
AD-709 570
- HEAT TRANSFER THROUGH FABRICS.  
AD-712 505
- A METHOD AND RATING SYSTEM FOR  
EVALUATION OF THERMAL PROTECTION.  
AD-846 419
- STROBL, WOLFGANG W.  
•••  
EFFECTS OF VARIOUS GASES ON  
HANDGEAR INSULATION.  
AD-628 367
- SULLIVAN, J. J.  
•••

UNCLASSIFIED

SWA-TRE

FEASIBILITY STUDY AND CONCEPTUAL  
DESIGN FOR A PERSONAL THERMAL  
CONDITIONING SYSTEM.  
AD-670 212

•SWAIN, DOUGLAS S.  
•••

FOOTWEAR FOR INUNDATED AREAS.  
AD-746 654

•TANENHOLTZ, STANLEY D.  
•••

RESEARCH ON ACOUSTICAL PROBLEMS OF  
THE MILITARY: A REVIEW AND FUTURE  
ASPECT.  
AD-680 185

•TAUBER, JOHN F.  
•••

PHYSIOLOGICAL EVALUATION OF A FREE-  
FLOODING DIVER HEAT REPLACEMENT  
GARMENT.  
AD-684 479

•••  
THEORETICAL THERMAL REQUIREMENTS  
FOR THE MARK II DIVING SYSTEM.  
AD-694 313

•••  
EVALUATION OF THE NSRD HEATER PUMP  
PERFORMANCE CHARACTERISTICS AND  
RELIABILITY.  
AD-694 023

•••  
EVALUATION OF A DIVER'S  
THERMONUCLEAR SWIMSUIT HEATER  
SYSTEM.  
AD-705 064

•••  
DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.  
AD-727 606

•TAYLOR, DOUGLAS  
•••

SEALAB III - DIVER'S ISOTOPIC  
SWIMSUIT-HEATER SYSTEM.  
AD-708 880

•THEODORE, MICHAEL  
•••  
ENGINEERING RESEARCH PROTOTYPE

DISTRIBUTION SYSTEMS FOR  
THERMAL EQUILIBRIUM CLOTHING.  
AD-666 226

•THOMPSON, E. D.  
•••

CANADIAN SELF-CONTAINED DIVING  
EQUIPMENT PERFORMANCE TESTS.  
AD-692 058

•THOMPSON, JAMES G.  
•••

ANALYSIS OF THE THERMAL RESPONSE OF  
PROTECTIVE FABRICS.  
AD-759 525

•THORBURN, DAVID E.  
•••

CENTRIFUGE VALIDATION OF A TACTILE  
'G-LIMIT' WARNING DEVICE.  
AD-732 194

•TINKLEPAUGH, K. N.  
•••

TIMED HEAT-RELEASE CHEMICAL SYSTEM  
FOR UNDERWATER APPLICATIONS:  
THERMAL CREAM WARMS DIVERS AND  
DOWNED PILOTS IN OCEAN.  
AD-647 892

•TOLNURST, GILBERT C.  
•••

SOUND ATTENUATION CHARACTERISTICS  
OF THE PROJECT MERCURY PRE-  
PRODUCTION FULL PRESSURE SUIT  
HELMET.  
AD-622 197

•TONLE, GEORGE B.  
•••

A STUDY OF TECHNIQUES AND EQUIPMENT  
FOR THE EVALUATION OF  
EXTRAVEHICULAR PROTECTIVE GARMENTS.  
AD-635 206

•TREVETHAN, WALTER P.  
•••

ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.

P-23

UNCLASSIFIED

/ZOMDB

UNCLASSIFIED

ULV-WAL

AD-732 429

•ULVEDAL, FRODE • • •

FLAME PROTECTION AFFORDED MICE BY A  
NONCOMBUSTIBLE GARMENT IN 100%  
OXYGEN ATMOSPHERES.  
AD-665 833

•UMANSKII, S. P. • • •

SOVIET HIGH ALTITUDE EQUIPMENT FOR  
AIRCREW PROTECTION.  
AD-642 178

• • •  
THE OUTFITTING OF THE PILOT AND THE  
COSMONAUT.  
AD-642 156

•VAN PATTEN, ROBERT E. • • •

APPLICATION OF THE RANQUE-HILSCH  
VORTEX TUBE TO AIRCREW COOLING  
PROBLEMS.  
AD-673 345

• • •  
VORTEX TUBE AS A THERMAL PROTECTIVE  
DEVICE.  
AD-725 455

•VAUGHN, CHARLES W. • • •

TROPIC SERVICE TEST OF FUNCTIONAL  
UNIFORM FOR ARMORED VEHICLE  
CREWMEN.  
AD-857 571

•VEGHTF, JAMES H. • • •

RESPIRATORY AND MICROCLIMATE  
TEMPERATURES WITHIN THE PARKA HOOD  
IN EXTREME COLD.  
AD-608 134

• • •  
EFFICACY OF PRESSURE SUIT COOLING  
SYSTEMS IN HOT ENVIRONMENTS.  
AD-627 190

• • •  
EFFICACY OF VENTILATING SYSTEMS.  
AD-726 474

• • •

COLD WATER EVALUATION OF  
ENVIRONMENTAL MARINE DIVING SUITS.  
AD-754 276

• • •  
EVALUATION OF FIRE RETARDANT  
FABRICS.  
AD-754 935

•VOINOV, YU. P. • • •

ASSESSMENT OF THE THERMAL  
RESISTANCE OF CLOTHING.  
AD-750 830

•VOSKRESENSKAYA, N. • • •

WORK CLOTHES.  
AD-688 057

•VOTTA, FERDINAND, JR. • • •

FLOW OF HEAT AND VAPOR THROUGH  
COMPOSITE PERM-SELECTIVE MEMBRANES  
UNDER SIMULATED CONDITIONS.  
AD-671 681

• • •  
FLOW OF HEAT AND WATER VAPOR  
THROUGH PROTECTIVE CLOTHING.  
AD-712 994

• • •  
PASSIVE THERMAL CONTROL SYSTEMS FOR  
ADVANCED SPACE SUIT CONCEPTS.  
AD-714 224

•WACHTEL, THOMAS L. • • •

ENGINEERING TEST OF LIGHTWEIGHT  
UNDERWEAR OF THE WINTER FLIGHT  
CLOTHING SYSTEM: THERMAL  
PROTECTION.  
AD-732 429

•WALK, DIETER E. • • •

FINGER DEXTERITY OF THE PRESSURE-  
SUITED SUBJECT.  
AD-603 705

• • •  
MOBILITY OF PRESSURE-SUITED  
SUBJECTS UNDER WEIGHTLESS AND LUNAR  
GRAVITY CONDITIONS.

P-24

UNCLASSIFIED

/ZOM08

UNCLASSIFIED

WAL-ZAR

AD-676 979

WALTERS, GARY B.

HUMAN FACTORS EVALUATION OF  
SURVIVOR ESCAPE: II-A. TOP  
EGRESS WITH THE BRITISH SUBMARINE  
ESCAPE IMMERSION SUIT AND THE  
STEINKE HOOD.  
AD-730 711

WALTON, O. H.

MOMENTS OF INERTIA AND CENTERS OF  
GRAVITY OF THE LIVING HUMAN BODY  
ENCUMBERED BY A FULL-PRESSURE SUIT.  
AD-679 863

WEBB, PAUL

PROTECTION OF AIRCREWS FROM HIGH  
TEMPERATURES: USE OF A WATER-COOLED  
GARMENT FOR HEAT BALANCE STUDIES IN  
MAN.  
AD-727 222

WEIDMAN, BRENT H.

EFFECT OF SAFETY GLOVES ON  
SIMULATED WORK TASKS.  
AD-718 981

WEISS, R. A.

PHYSIOLOGICAL EVALUATION OF EFFECTS  
ON PERSONNEL WEARING THE MICROWAVE  
PROTECTIVE SUIT AND OVERGARMENT.  
AD-690 890

WILSON, CHARLES

EVALUATION OF FIRE RETARDANT  
FABRICS.  
AD-754 935

WILSON, CHARLES L.

WILLY POST: FIRST TEST OF HIGH  
ALTITUDE PRESSURE SUITS IN THE  
UNITED STATES.  
AD-616 482

WISEMAN, OSCAR H.

DEVELOPMENT OF A HEATER-PUMP TO  
PROTECT A DIVER IN COLD WATER.  
AD-727 606

WITHEY, D. J.

EMERGENCY BREATHING AND SUIT  
PRESSURIZATION SYSTEM.  
AD-608 088

WOLFE, T. N.

COLD WATER PROTECTION UNDER FIELD  
CONDITIONS.  
AD-738 822

WOLFE, T. N., III

SECOND SERIES U.S. RUBBER COMPANY  
LIGHTWEIGHT DIVING OUTFITS WITH  
AIRLINE AND DEMAND SUPPLY.  
AD-893 971

WONG, A.

FEASIBILITY STUDY AND CONCEPTUAL  
DESIGN FOR A PERSONAL THERMAL  
CONDITIONING SYSTEM.  
AD-670 212

WOOD, BENJAMIN F.

UH-1 DOOR GUNNER PROTECTION.  
AD-782 112

WOODCOCK, A. H.

SOME EFFECTS OF ABSORBENCY OF  
CLOTHING MATERIALS.  
AD-685 147

YANKELEVICH, V. I.

CALCULATION OF THE THERMAL  
RESISTANCE OF THE AIR LAYERS IN AIR-  
PERMEABLE CLOTHING.  
AD-746 037

ZARRIELLO, J. J.

P-25

UNCLASSIFIED

/ZOH08

UNCLASSIFIED

ZIN-ZIN

• • •  
TEST AND EVALUATION OF U. S. AIR  
FORCE EXPERIMENTAL CUTAWAY TYPE  
ANTI-GRACKOUT SUITS DESIGNATED MA-

1.  
AD-622 047

• ZIMMERER, THEODORE

• • •  
HUMAN FACTORS STUDY OF QMC CLOTHING  
AND EQUIPMENT DURING COLD WEATHER  
TESTS OF THE SERGEANT MISSILE  
SYSTEM, II.

AD-701 864

• • •  
HUMAN FACTORS STUDY OF QMC CLOTHING  
AND EQUIPMENT DURING COLD WEATHER  
TESTS OF THE PERSHING MISSILE  
SYSTEM.

AD-701 872

• ZIMMERMAN, FRANK J.

• • •  
METEOROID THREAT TO EXTRAVEHICULAR  
SPACE SUIT ASSEMBLIES.

AD-691 461